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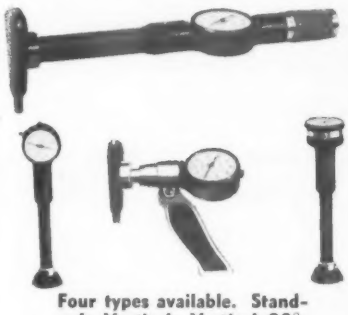

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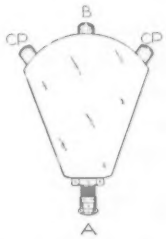

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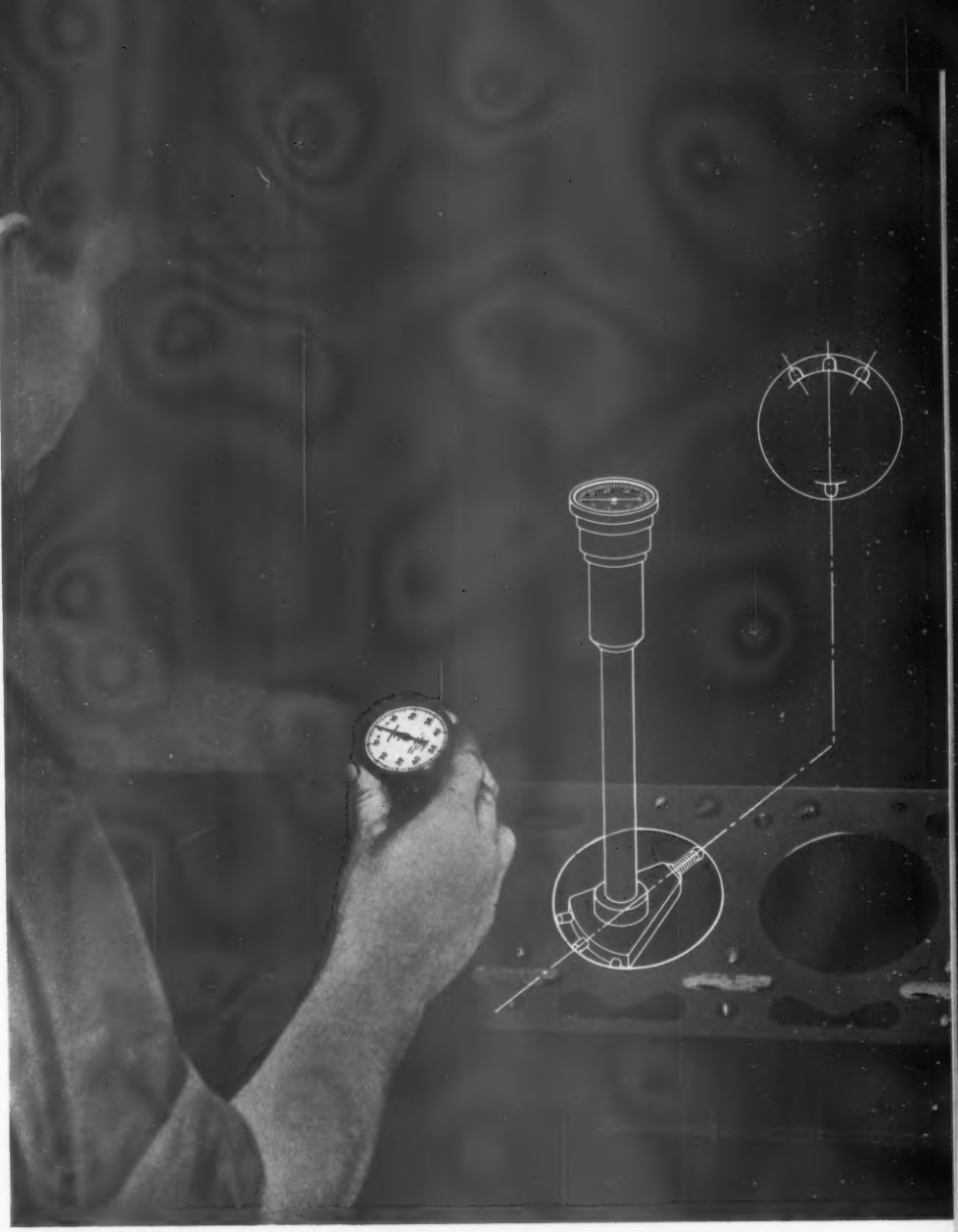

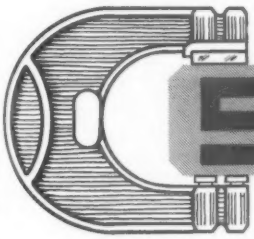

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The Tool Engineer

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Official Publication of the AMERICAN SOCIETY OF TOOL ENGINEERS

Vol. VIII SEPTEMBER, 1939 No. 5

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Owing to the nature of the American Society of Tool Engineers, a technical organization, it cannot, nor can the publishers be responsible for statements appearing in this publication either as papers presented at its meetings or the discussion of such papers printed herein.

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Where Are We Going?

AN EDITORIAL
By
A. E. RYLANDER

WHAT I'd like to know," said a visiting Tool Engineer, "is where we are going. What is in store for us?—what is our future? Are we just organizing, or have we a definite program promising definite results?" Well, we are going onward, for one thing; new vistas open so fast that, editorially, we cannot keep pace. In organization alone we are undoubtedly progressing faster than any other purely ethical engineering society; ours is an unprecedented growth that, from inception seven years ago, and from a local less than five years ago, has spanned the continent and, lately, leveled international barriers. Now, with thirty Chapters at date of writing, we are approached from below the Isthmus, even from across the Atlantic. No society could have had such growth without a definite purpose and a program that promises satisfaction for definite human needs.

There was motive behind the embryo Society and it multiplies as we face and resolve new problems, nor, do we lose sight of the original concept as the field broadens. We do not know what is in store for us, but we have a fair idea of what the future should be as far as we are personally responsible for shaping our own destiny. Our primal aim is to further the science of Tool Engineering; that, we have indisputably done and will continue to do. Coincidental with that, our purpose was to promote good fellowship, and we have done that. This is a friendly Society. It is also our purpose to further the professional standing of the Tool Engineers, to encourage teaching of the science in our colleges, and we have done that. Now, since none of these things could have been accomplished without organization, then, organization alone can be termed an end in itself. It's like education which, also an end in itself, opens avenues to higher intellectual levels and a better life.

Our program includes shaping the industrial future and, to the limit of our ability, promoting industrial harmony, the latter perhaps effected by example and precept. We encourage new industry by creating the tools of manufacture, so that manufactured goods can be made at costs that will beget healthy competition and broader markets. That makes us a direct instrument in furthering the commerce of the world. Conjecture and experiment, in new commodities, have become and are becoming realized; take, for example, the amazing growth of plastic production. In a twinkling of time, it seems, it has run the scale from buttons and novelties to radios and instrument panels, from furniture to all but complete airplanes. Tools alone made this growth possible, since no invention or development has commercial value unless it can be commercially produced. Where are we going?—why say, we haven't scratched the surface of the potential future!

In creating tools, we are indirectly if not directly responsible for opening new industries; that makes us an agent in reducing unemployment. True, we obsolete old methods, inadvertently create a state of temporary transition, but in the end factories are reared where only open fields stood before and homes spring up to house the workers absorbed by the new industries. All civilization has been built on the ashes and ruins of former stages of progress; it is only logical, then, that we modernize. This is sure, that as fast as science evolves new materials that enter into product, and as fast as inventors and product engineers put them to practical use, the Tool Engineers will create the tools of manufacture, so that they can be commercialized. Everything considered, we have a very definite program; besides striving for our own, personal objectives, we promote the refinements of civilization, add to its wealth. With a program at once so broad, yet so definite, we cannot go astray.

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Cleveland's huge public auditorium, only exhibition hall large enough for the National Machine Tool Builders' Show, will again house what is thought to be the largest commercial exhibit of its kind in the world. The picture here shows only the auditorium proper. The underground exhibit areas total several times the amount of space available in the auditorium alone.

Tool Engineers to Attend Show and National A. S. T. E. Meeting

Central Armory, located near the public auditorium, will also house a "Machine and Tool Exhibition" October 4-13. A group of manufacturers of tools, machinery and precision gaging equipment, will exhibit here.

Excursions, Technical Sessions, Prominent Speakers Augur Worthwhile Trip

BY EVERY mode of modern transportation, by boat, by bus, by train, by plane, Tool Engineers from everywhere will trek to Cleveland for the National Machine Tool Builders Show, the Machine Tool Congress, and the American Society of Tool Engineers' National Meeting. Special excursions by train from chapters coast to coast and from Canada to the Gulf are being planned to take Tool Engineers to Cleveland for these important events. The largest inland boats in the world will be used or chartered to take other chapters of the A.S.T.E. to the Show and meetings, especially the Detroit chapter which is planning to send at least four hundred and fifty of its members and friends. The technical sessions, the prominent speakers, the city of Cleveland itself, the trip, the many get-togethers of old friends and associates, as well as the Show and Congress are reasons enough for the thousands of Tool Engineers who are planning to attend.

This time the Show is bigger — in fact, every phase of the Cleveland event is much larger and more comprehensive than it was in 1935. At that time Detroit Chapter of A.S.T.E. came by boat from Detroit with a few hundred members and their friends. This year A.S.T.E. will participate in the Cleveland Show with some 30 chapters and several thousand members from all sections of the country.

Cleveland's Terminal Tower is a familiar landmark especially attractive as it is lighted by night. It serves as a guide post to many visitors in Cleveland's downtown area.

On October 5, the American Society of Tool Engineers will sponsor the Machine Tool Congress Technical Session at 8:00 p.m. in the Cleveland Engineering Society's Auditorium, Guild Hall, tenth floor, Builders Exchange Building. The Cleveland Engineering Society lounge will be open during this entire time for the comfort and convenience of members and visitors to this session. The subject will be a symposium on bearings. A.S.T.Eer Eugene Bouton, of the J. I. Case Company, Racine, Wisconsin, will present a paper on "The Application and Use of Plain Bearings" particularly as applied to machine tools. Stanley R. Thomas, Chief Engineer of the Bantam Bearings Corporation, South Bend, Indiana, will present a paper on "The Application and Use of Anti-Friction Bearings" particularly as applied to machine tools. Karl L. Herrmann, an engineer of South Bend, Indiana, will also present a paper on "Bearings," their use and misuse, and will discuss the application of both plain and anti-friction bearings in general.

On Friday, October 6, the Society will hold its Semi-Annual Meeting and technical sessions in the Hotel Statler ballroom, Cleveland, Ohio. The dinner

(Continued on page 34)

This new machine saved us 60%!

● Where formerly it took 7½ minutes to machine these troughing rollers, this manufacturer has cut the time to 3 minutes, with a new Gisholt No. 5 Ram Type Universal Turret Lathe—a saving of 60%.

Savings like these on numerous different parts can make a big difference in your manufacturing cost—and in your profits. Probably you would be just as enthusiastic if such important savings were made in your plant on a new Gisholt. That's why it is wise to investigate what these new Gisholts can do to reduce costs in your machine shop. Shall we send literature?

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The Tool Engineer's Place in the Development of Aerial Transportation

"The aeroplane of two decades ago was built almost entirely by hand, with little thought for, or the possibility of interchangeability — but that was before Tool Engineering was applied to the industry." This picture typifies two outstanding examples of the Tool Engineer's art.

Photo—Courtesy Chevrolet Motor Division

IN this modern world the complexity of life is no more manifest than in the inter-dependability of one thing with another. It seems to be a hard and fast rule with Mother Nature, that nothing shall stand alone, independent. With the aid of sun, rain, soil and sod, the inexorable law of life keeps the eternal balance always in the neutral position.

As with Nature, so it is with our mechanical and scientific World. The discovery of the microbe followed the invention of the microscope, just as night follows day. In like manner, the power loom and the locomotive, were preceded by the discovery that steam could be applied to a piston, and so convert a reciprocating motion to the circular motion of a wheel.

The modern fully equipped automobile, for another example, is truly a mechanical marvel. Supplying its own power and light, providing its occupants with air-conditioned comfort, one can travel the length and breadth of the country at speeds, which less than a century ago, were thought to be fatal to human life. All it requires is a supply of fuel, and the touch of a hand to guide it. But would this have been possible had not that bearded old gentleman Mr. Dunlop invented the pneumatic tire, or Otto of Germany developed the four stroke principle for internal combustion engines?

Nor does our law of dependability end with the creative genius. That an article be popularized in the mind of the general public, is as important as its invention. This is where the business man steps into the picture, and by enlisting the forces of labor, salesmanship, tool-engineering, and advertising, he becomes merely a cog in the train of industrial wheels. The task of setting the wheels in motion belongs to the general public. It is they who really give the impetus to industry.

Today we are witnessing the struggles of a new enterprise in our midst. I refer to that modern magic carpet, Aerial Transportation. Although some measure of success has been achieved, there is still much development to be done in all its branches. To begin with, it is rather disappointing to note that the popularization of the aeroplane has not kept pace with its scientific development. The public still thinks of the

(Continued on page 56)

By

LESLIE MacGREGOR

GLENN L. MARTIN COMPANY

MEMBER A.S.T.E.

Let's Make Drawings

By

THE CHECKER*

FROM 1914, when the war started, and until we got into it for better or worse, there was considerable manufacture of munitions tools and machinery for the Allies, with a lot of grief for the designers who got all mixed up on the first angle projections, especially on the French drawings. One such comes to mind, where an expensive machine was built hind side to, the error not discovered until the parts were delivered for try-out. That was two days before delivery, and it is to the credit of American ingenuity and initiative that the machine went out on time, although the transport was straining at the moorings when the dray finally lumbered onto the dock. All this, of course, is a case for standardization of drawings, but the point is, to what norm are we going to standardize, assuming that there is a norm?

A designer, who may be an experienced and capable man, leaves one engineering office to take employment elsewhere, finds that he has to study their system and, if he is a producer rather than just a pencil pusher, is subject to considerable irritation when a perfectly workable design conflicts, in minor details, with the established standards of the new employer. So, there is talk of a norm, but I wonder if too close adherence to standards wouldn't be more of a detriment than an aid. After all, design presumes new development, and that takes inventive genius. It has been said that the good designer is seldom a good draftsman, and that is probably true to a degree. It would be fairer to say that the designer is too intent on getting the tool into use to bother about refinement of drawing. He will, however, make legible drawings that are understood.

From considerable experience, as designer, checker and chief, certain characteristics of drawing stand out as preferable, because they convey information at a glance. One is, that the cross section is the easiest of all to read and conveys the most information when it comes to complicated assemblies. There is no confusion of lines that must be puzzled out. It is also good practice to show angular projections out of plane, with a note to that effect, and when there is chance for confusion, an arrow or two to show angle from which view is taken. This reduces the number of lines required to a minimum and helps preserve the sweet temper of the tool room foreman.

Personally, I disagree with a recent contributor to "The Tool Engineer" when he says that the fewer dimensions the better. I know what he means, and in some die drawings it is a good plan to leave fitting to the discretion of the die maker. But in tool design, there should be enough dimensions and notes so that the tool maker doesn't have to assume responsibility for the working. It's all right where competent and experienced men are employed, but one gathers that these are going the way of all flesh, becoming scarcer. The designer should be able to determine location and sizes of screws and dowels. If he can't he is not a designer.

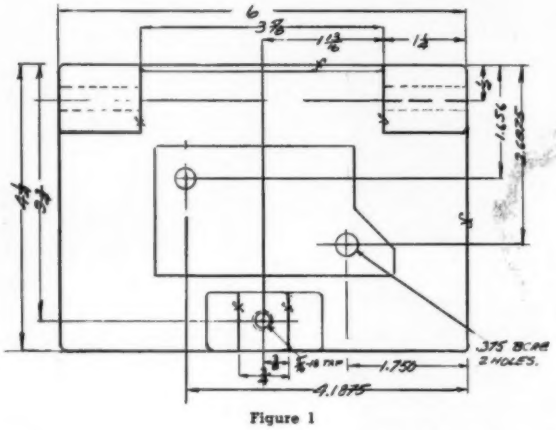


Figure 1

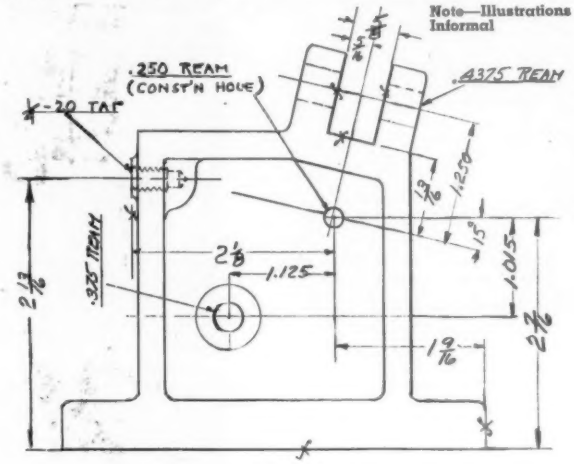


Figure 2

Some Suggestions

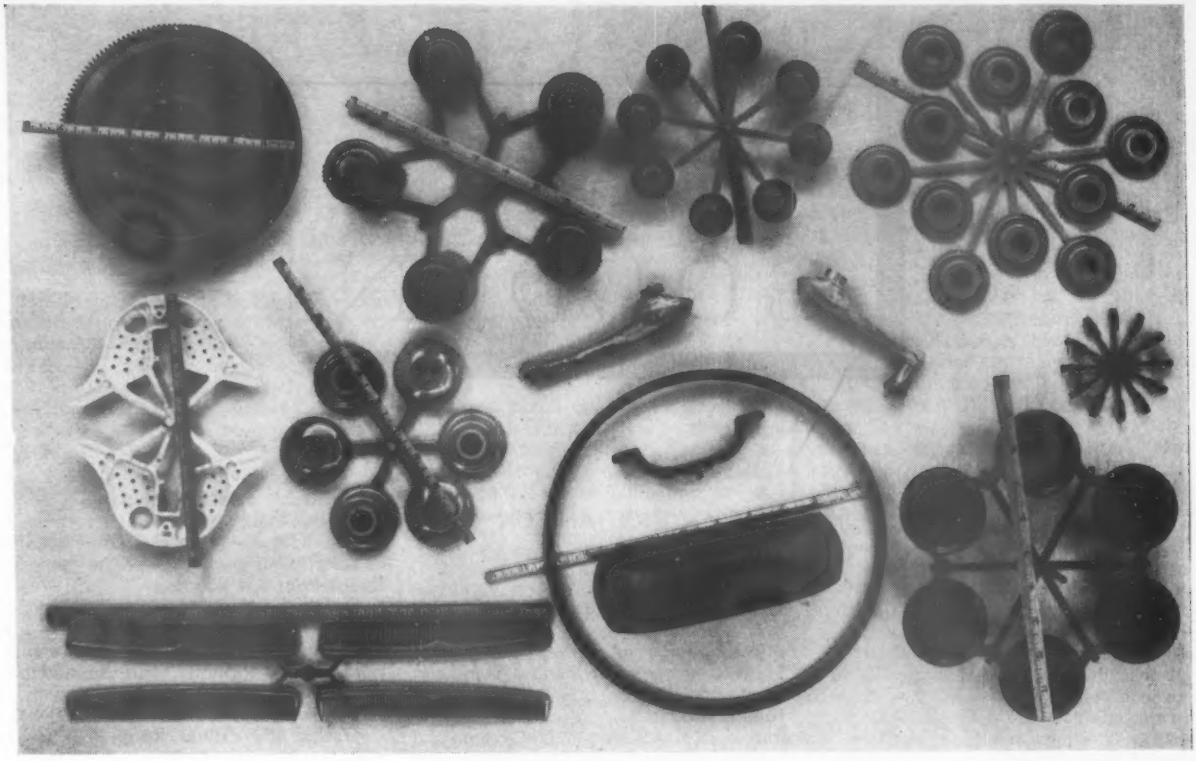
The writer would recommend, as one feature of standardization, that all dimensions run from definite gage points, usually finished surfaces or, if angles enter into the picture, from a construction hole. Figs. 1 & 2 illustrate the suggestion. There is nothing new or novel about them, since they have been used as far back as I remember, but more in the east than in the midwest.

The writer would also recommend that, for either socket head or any of the conventional screws, the head is shown slotted rather than with the hex or other shaped hole, according to make of screw used. Deviation from the slot is due to anxiety on the part of various makers to feature their own product, hence, they offer bait in the form of templets. If a slotted screw is shown, it is apparent at a glance that it is a screw, from a plan view. If any particular make is desired, a note conveys the information. Of course, in the case of hex cap screws or nuts they should be shown as such; a glance tells the story there too. It is also recommended that a screw be shown as a screw, the threads drawn in instead of dotted, parallel lines which, in involved drawings, make for confusion. The ¼-20 tapped hole, Fig. 2, illustrates the method of showing.

Now, showing screws that way would probably start a revolt among the super-efficiency exponents; they will say that it takes too much time. But actually, the time required for drawing is usually a minor consideration in design; what is needed is more time to think. The pushing of a pencil across a sheet of paper doesn't take long once the idea clicks. Anyway, I have long since come to the conclusion that high efficiency in the drawing room is usu-

(Continued on page 34)

* Writer prefers to remain anonymous.



PLASTICS

By

J. LAIRD

FORD MOTOR COMPANY

IT IS rather late to start a discussion of the broad field of plastics. I had an address prepared, but I think I will just speak informally for a few minutes and leave the rest of the time for Mr. Stewart of our Molding Department, who can give you information of more direct interest to Tool Engineers.

There is a very wide interest in the subject of plastics at the present time. This interest varies and we may consider:

(a) The interest of the manufacturer of plastic material.
(b) The interest of the molder of plastic parts.
(c) The interest of the consumer or user.

The Ford Motor Company is a little unusual as we to some extent combine all these interests. We manufacture some of the plastic materials we require; we design and mold a large proportion of the molded parts which we use; and as we assemble these parts on automotive units which we supply to the public, we function as consumers of molded parts. This gives us an excellent opportunity to keep in touch with the art and with the trends in the uses and choice of plastics. We have an opportunity to know why some plastics are used less and less while others are growing in popularity and usefulness.

Types of Plastics

Some plastics soften when heated so they can be molded and harden on cooling without undergoing any permanent change in properties. Others when molded under heat and pressure undergo a permanent change so they cannot again be softened. The first type are known as thermo plastic materials, the second as thermo setting. This gives a classification convenient to the user on account of the different physical properties of the finished part and to the molder, as methods of molding are determined by these characteristics.

The most important thermo plastic at present is cellulose acetate produced from cotton linters by reaction with acetic acid. This material can be produced colorless or in any shade and is quite resistant to the action of light. On this account it is used very extensively for making small parts used in automobile trim, such as escutcheons, knobs, etc., and as it is fairly tough it has been suggested for window moldings and larger parts. Parts are made by injection molding. The granulated material is preheated by oil or an induction heater to about 300 degrees F. in a cylinder and forced by hydraulic pressure into a die held at room or at a moderate temperature. The molded part can be removed from the mold immediately, a molding cycle being completed in from a few seconds to a minute. As several small parts can be molded at one operation in a multiple mold, this permits very rapid production and large output from a single press. This enables cellulose acetate to compete with materials which are less expensive, per pound, but which are more troublesome to mold. Molds must be made to close with a high degree of precision and must be very rigid to stand up under molding pressures which may be 20,000 to 25,000 pounds per square inch.

Molding Technique

Thermo setting plastics must be used where resistance to temperatures above atmospheric is required. Plastic made by interaction of phenol (carbolic acid) and formaldehyde, commonly known as Bakelite from the inventor Dr. Bakeland, is the most widely used plastic and is almost the only plastic used in electrical goods where high dielectric strength as well as physical strength is required. For example, the rotors and plates used in Ford distributors must withstand a potential of 12,000 volts at a temperature of 180 degrees F. These are made from the highest quality of phenol formaldehyde resin. The raw materials are reacted together to form a fusible resin. This is intimately mixed with woodflour or other filler or modifier to form the molding powder. This powder either as such or compressed to pellets or preforms, is used to change hot molds, and the parts are molded at about 300 degrees F. under pressures of 2000 to 4000 lbs. per square inch. A

(Continued on page 44)

TALK IS GOLDEN

By

ANDERS JANSSON*

AN old saw says that "speech is silver, silence is golden," which, in the language of the street, implies that talk is cheap. Well, it is, but considering the amount of information that can be conveyed by talk it assumes a rather definite value. Inventors, especially, take quite seriously the adage of "a word to the wise" and are mighty careful that the wrong word doesn't slip out in a conversation dealing with new developments. The listener, often possessed of a canniness that borders on mental telepathy, may get a whole picture from the one word. Of course, reference is made here to constructive talk, engaged in for a purpose; there is no defense of the clack who, like the babbling brook, goes on and on forever—or until he dries up.

To convey an idea, we either write it, draw a picture of it or talk it over. Writing is simply recorded speech, in which the individual can reach a larger audience than with a speech directed at a comparative few. Drawing is at once a record and a picture, need not even be illustrated. Yet, our salesmen, trying to sell an idea, a tool, machine or appliance from a drawing usually supplement it with speech. For that matter, even manufacturers' catalogues, containing dimensioned drawings, are profusely supplemented with written notes and explanations. The drawing alone is not enough, and even the written word can be ambiguous. A bit of talk clears up doubtful points.

Talk, when confined to business, is especially valuable in the drawing room or engineering office. A designer, for example, is assigned a difficult problem. He mulls it over, grasps at a mental concept and makes sketches until he decides on a probable solution. But, the sketch that looks so good may not fit into the scheme at all when laid out to scale. So, we try again, run into another blind alley. Now, let several men get around, all interested, and immediately the wheels of thought begin to spin. There is competition! More, there are lines down on paper that can be criticized; you just can't criticize a blank sheet of paper.

I have seen what should have been academic discussions, about engineering problems, degenerate (using that term advisedly) into a near free-for-all with feelings running high. Then, of a sudden, as someone starts a sentence: "Hell, that's it! Jumping cats, what a dumbbell I was not to see it." A tenable basis outlined, one suggestion leads to another, and soon the design progresses to a workable result. That makes talk pretty valuable, eh?

One hears so much about these strong, silent men, yet, in the final analysis, the wheels of progress are greased by the enthusiasts with ideas and the gift of speech to sell them. Personally, I've never met a deaf and dumb salesman, although the deaf mute can be both strong and silent, and endowed with ample intelligence to boot. Calvin Coolidge was imputed a silent man, yet, was in reality a very voluble talker when interested in a subject, or when conveying an idea. Once the idea clicked he might crawl into his shell. The writer once worked for a nationally known executive who had a reputation for taciturnity, and who in turn discouraged speech except on topics pertinent to his business. Yet, companion for two days on a train trip, he talked on and on, then, his enthusiasm spent, was content to sit back and listen. Finally, the entire conversation was reduced to a single, written page, but it was enough to initiate a project that ran into several million dollars. That's converting talk into gold.

A minor foreman, in a department of one of our larger industries, was also known as a silent man; he has since stepped up into higher executive rank, but not because of silence. Rather, he could talk one deaf, dumb and blind when enthused over a new idea, but when satisfied that everyone concerned understood it, he shut up like a clam. That is one trouble with some executives, that they don't talk enough, then, when partly understood instructions are questioned, become impatient. If an idea is worth conveying, it should be covered so thoroughly that no further doubt exists. Fortunately, engineers can't talk without a pencil in their hands, so there is always some record to refer to—if one can separate the pertinent from the doodles.

One chief engineer of my acquaintance is so expert in conveying word pictures that he can instruct a draftsman over the phone, and depend on getting pretty nearly what he wants. "You take a shaft, horizontal, using ball bearings. It's driven from a 3 horse motor running 1150. Run a three to one reducing gear from it, transmit to a pair of mitres to a vertical shaft, using a step bearing. Put a flyer on it with a variable traverse, about 2 ft. swing, and cover it with a safety shield. Got that? Okay, I'll look it over when I see you."

Speech, intelligently used, can be as clear cut as an etching. The Indians must have been intelligent, even if savage, for theirs was a most descriptive speech, shaded with poetic beauty. They gave names to white men that made them marked men even among remote tribes that had never seen them before, as they gave names to places that were utterly pat. The white man, with his hustle and bustle, has not made the best use of the most prevalent means of communication, that is, has left expression mainly to the trained speakers. Fortunately, our Tool Engineers have sensed the value of speech, as a result, have inaugurated speakers clubs where men who have previously done most of their thinking on their seats now learn to think clearly and quickly on their feet. I daresay that many a man among us owes promotion to a speakers' club.

Now, I have little patience with loose talk in the engineering office, or the plant, except as passing the time of day may create a momentary diversion to ease tension. A smile, a nod or a friendly wave of the hand may have the same effect. But when it comes to instruction, or discussion of important projects, then, speech is truly golden, silence dross. You write it, draw it or say it, and saying it covers the most territory in the least time, costs the least. Only, it's not permanent, that's why we make drawings.

* A.S.T.E. member.

Semi-Automatic Hydraulic Grinder Has Novel New Features

Elimination of the human element and reduction of manual effort on the part of the operator is the outstanding feature of the new Semi-Automatic Hydraulic Grinding Machine developed by Landis Tool Co.

By

S. S. SHOEMAKER

LANDIS TOOL COMPANY

THIS machine is basically the standard 10" x 36" Type C Machine but numerous supplementary changes were made to apply the semi-automatic features. This machine is ideally adapted to grind work with a series of different diameters which can be ground by the plunge cut method.

Figure 1 shows a general view of the machine while Figures 2 and 3 show close-ups of the set-up for finish grinding four main bearings of an eight cylinder camshaft. The shaft is supported by a fixed work rest on the center bearing which has been finish ground.

The semi-automatic cycle is as follows: the operator lays the shaft into work cradles which hold it in line with the work centers, he then moves the main control lever on the front of the machine to the right or left depending upon which direction the work carriage is to move. From then on until it is time to remove the work, the cycle is automatic, that is, the work starts to rotate, the wheel will advance and grind the first bearing to size, go back to clear, the carriage moves to the next bearing which is ground to size and so on until the last bearing is ground. The operator then moves the main control lever to the central position when the work rotation stops, the footstock center recedes, and work drops to the cradle where it is removed by the operator and another piece is inserted. The machine is equipped with various interlocking safety features so that should anything go wrong during the cycle the machine ceases to function.

Controlled by Sizing Device

This automatic cycle is controlled by the Landis-Solex sizing device which is based on the principle that any resistance to the free escape of air from a line will build up a back pressure in that line, this pressure increasing as the resistance increases. Figure 3 is a clear illustration of the type of caliper used on all classes of work, the only variation being a change in shoes for different diameter work. The air outlet is between the two shoes, which rest against the work when in operation, and as the diameter of the work decreases the air jet approaches the work, the gap between the work and jet is decreased thus increasing the resistance to the escape of air building up a pressure which is transmitted to the mercury switch. This mercury switch is in principle a U-tube with electric terminals in one column. As the mercury rises, due to air pressure, it touches these terminals completing the circuit, energizing a solenoid which operates

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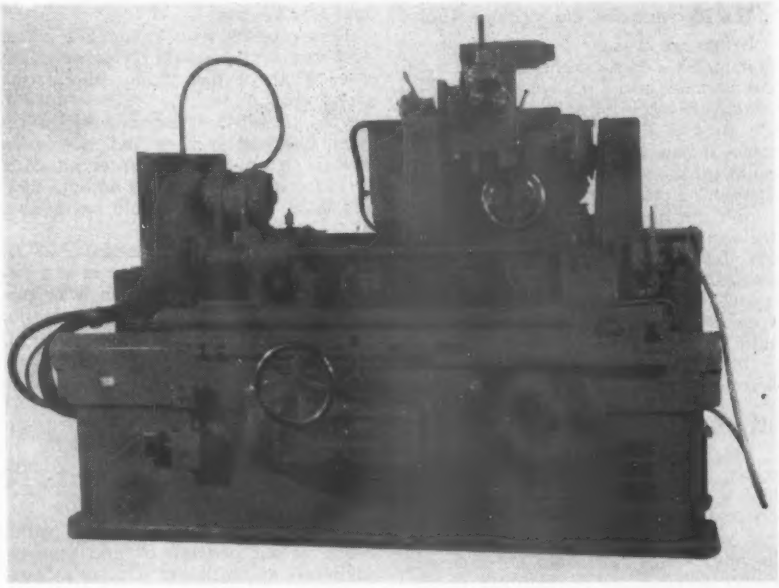
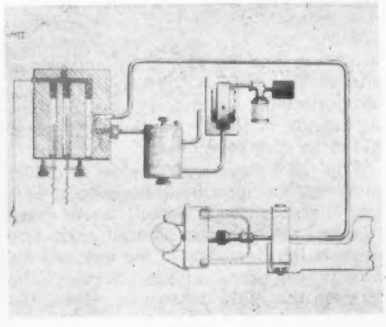


Figure 1—Front view of a Landis 10" x 36" Type C Semi-Automatic Hydraulic Grinder tooled to grind four camshaft main bearings progressively.

Figure 2—Front close-up of a Landis Camshaft Main Bearing Grinder showing a typical set-up employed for the handling of an eight cylinder camshaft.

Figure 3—Typical set-up view on the Landis Camshaft Main Bearing Grinder showing very clearly the Landis-Solex sizing device caliper frames and the fixed work rest which is sometimes employed to support the center main bearing during grinding.

Figure 4—Schematic drawing of the various elements of the Landis-Solex sizing device. On the Landis Camshaft Main Bearing Grinder the number of caliper frames and mercury switches corresponds to the number of main bearings ground.



IT is to Sir Richard Arkwright of date 1769 that we must look for the inception of the idea that machine tools displace labor: for in that year he introduced his famous Spinning Jenny, with which one man did the work that formerly required one hundred. The workers of the time were incensed and sought to destroy the machines and prevent their development, fearing their effect on their own employment. Actually we know that where one hundred men were formerly engaged in spinning now there are thousands in the mills, with the result that wealth and prosperity have developed.

However, since then labor has had a feeling that the introduction of machines and machine tools has had a distinctive effect on employment and at regular intervals cries go up that the machine is taking away the bread from the workers' mouths. These present bad times are no exception, and many of the thousands who are employed blame the machine for their troubles.

The Machine and the Machine Tool

Before we discuss this attitude let us first make a clear distinction between the machine and the machine tool. The latter is the creator of the machine. By virtue of its ability to remove or shape metal it can form the parts that go to build up the machine. The machine is therefore a created product, the creation of the machine tool. Without the tool we would not have the machine, without the machine we would have no necessity for the tool, so the two are inextricably joined, and to get a full appreciation of the tool we must consider its product the machine. The automobile, the radio, the airplane, the washing machine, the electric toaster are our machines. The lathe, the planer, the press are our tools.

The former—the machine has become woven into our civilization, so that it is doubtful if today we could dream of going back to a period where our so-called luxuries did not exist. In other words, we could not dream of living without our automobile or our radio. These machines have created employment. It is estimated, and accurate figures are impossible to obtain, that in the last forty years the automobile alone has created close on ten million jobs. First there are the actual makers of the cars themselves, then the makers of the tires and the various accessories. Then there are the steel workers, the glass and the textile workers that contribute their total to the finished product. Following then are the host of dealer establishments, salesmen and service men and repair shops. The great oil industry is largely supported by automobile use, and the thousands of filling stations give prosperity to countless others.

The highway and bridge builders must not be forgotten, because it is a fact that our roads would never have reached their present state of perfection without the demands of the automobile. Finally we reach, at the bottom of the ladder, the little restaurant along the highway and the little hot dog vender who owes his living directly to the automotive industry.

All of these jobs spring from the lathe, the planer, the grinder and the power press that shape the parts for our finished motor car.

The Cost of Machines

Suppose we had not tools, or only the tools of a bygone age, the simplest of hand tools, the simplest of lathes and other machines. What would the cost of the machine have been. We have figures on this. One authority states that the cost of making a low-priced car on a hand making basis would be $17,850. At this price, he adds, scarcely more than fifty cars would be sold each year. Cars would be in the same category as yachts, a luxury only for the very wealthy. At their present price millions are sold.

The typewriter now costing $110 would cost without the use of modern cost saving tools over $1000. And at this cost there would be few typewriters and few typists.

Storekeepers who spend $75 on an adding machine would be forced to pay over $700 for one made without machine tools.

One particular statement which has been checked and verified, is that the cheap watch retailing at about $1.50 would cost $1040 if made without modern tools, if indeed it could be made at all.

Our first tin cans manufactured entirely by hand were produced at a rate of 60 cans per day which was considered a good day's work. Canned foods were then a luxury enjoyed only by the rich. Today's improved tin cans are manufactured on lines of machines at a rate of 500 cans a minute per line, with the result that cans are cheap and canned goods can be enjoyed by the masses. Further, we are able to store up our surplus food supply and maintain its freshness till needed.

Our amusements are now within reach of our pocketbook and give enjoyment to millions. Today's radio machine costing up to $100 could not be made possible without the modern machine tool and without it would cost over $1000. The modern camera, the modern projector of our motion picture industry are only possible through the use of the machine tool, and tens of thousands are employed in this industry.

Years ago—one hundred or so—our great great grandfathers cut screw threads entirely by hand. Using a hammer and chisel and file, they laboriously shaped the thread to its proper dimensions. Screws were very expensive in those days and few people used them. Today they are produced by modern machine tools and are so cheap that you can buy a package in a ten cent store, and consequently employment where only given to a handful of men is now enjoyed by tens of thousands.

The Income Curve

The answer to these statements is generally true, that the cheaper you can make an article the more you can sell and cheapness can only be arrived at by taking every advantage the machine tool can give you in the way of saving time or energy or by producing more accurately. The more you can sell means, of course, more employment. The machine tool and mass production bring about lower costs and greater purchasing and hence greater employment. The shape of our income curve plays a part in explaining this fact. The curve is a roughly shaped bell outline and it peaks at a point where the great majority of our people receive incomes from $900 to $1100. The curve dwindles rapidly to those of

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zero income and less rapidly to those of greater incomes. People with certain incomes can only afford to buy goods at certain prices. Reduce the prices and you tap into an ever increasing section of the population and hence you have to produce more and take more people for the production. This law is an established one in mass production and marches with the second law, that the more you produce the cheaper the article becomes.

Cold rolled sheet steel sold at $102 per ton in 1923. In 1936 it sold $59 a ton. The result of this low price has led to a general increase in the use of steel in preference to wood. Steel bedsteads, steel furniture, steel automobile bodies and so forth are now possible at low cost, hence the new type steel mills producing this low cost steel have found increasing demand for their product and actually a total gain of employment among their men. In fact, overall employment is said to be nearly doubled.

Automatic polishing machines were installed in a large manufacturing plant. Seemingly they would displace labor. Actually they so reduced costs on this operation that sales prices were reduced, calling for more business which resulted in increased employment. Many such instances could be cited, and, in general, one might say that if business can be stimulated by lower costs, then increased employment results.

Effect of logical Processes Unemployment

By

JOHN YOUNGER

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PROF. INDUSTRIAL ENGINEERING OHIO STATE UNIVERSITY

Efficiency of New Machines

Quoting from one manufacturer, he states, "I know from specific experiences in our own plant that new modern machines are much more efficient. With one new machine we can frequently do as much work as we formerly did with two or even three more obsolete machines of the same class. It would therefore seem that the new machine tools we buy displace labor. However, as a matter of fact with all the more efficient equipment we have installed, our payroll is just as large as before. We are, however, running a much more efficient plant as a result of our investment in new machine tools. We are handling a greater volume of business and turning out a better product at a lower cost. All of these advantages pass on to our customers and ultimately to the final consumer—the user of the machine. By buying these new machine tools we have been the cause of giving additional employment for the labor required in their production. If we did not reinvest the material portion of our earnings in new modern efficient machine tools, we eventually could not compete with our old obsolete facilities, hence our employment would gradually shrink and we might even reach the point of passing out of the picture, giving no employment at all. Therefore, from actual experience and not merely a theoretical point of view, I cannot be convinced that machine tools do ultimately displace any labor."

Let us look at the picture of employment as a whole and see what the machine tool has done to it from the highs of 1929 to the year 1936, bearing in mind the very important fact that wage earners in manufacturing industries represent but one-fifth of our total number of bread winners in all occupations.

In 1929 there were 47,368,000 gainfully employed in all lines of agriculture, business, professional service, domestic and public service. Of this total 23 per cent were in manufacturing. In 1936, the latest year for which we have complete figures, 24 per cent of those employed were in manufacturing, this in spite of the fact that 1936 cannot be compared with 1929 in volume of business. Certainly few complained of technological unemployment in 1929, yet the proportion of those employed in manufacturing industries is as high today as it was then. According to estimates of the National Industrial Conference Board, more than 71 per cent of all unemployment in 1936 was in occupations other than manufacturing. It would seem that we must look elsewhere, than at the machine tool for our causes of this unemployment.

During 1937 employment in automobile factories averaged fifteen per cent higher than in 1929, although production lagged ten per cent below 1929 levels. In 1938 employment per car increased thirteen per cent from 1937. There has been no aggregate technological displacement of labor in automobile factories despite the introduction of countless new and more productive machines and processes.

At the beginning of this century the entire population of Detroit, Lansing, Flint, Pontiac and Akron, now typical automotive cities, was 369,000. Today the population of these five cities averages nearly three millions. They have multiplied themselves practically eight times in the past 39 years. Contrast this eight-folding of population in these cities with the mere tripling of population in the same period of Buffalo, Chicago and New York, or with the lesser growth of 70 per cent for the continental United States as a whole.

People came for the same reason that made our forefathers flock to California in 1849 and to the Yukon in 1896. They came to Detroit because men had discovered gold there—the gold of employment opportunity. People came to these automotive cities because there was work for them to do. There was money to be earned in wages and in profitable enterprise.

Creator of Employment

That the machine makes men work less is the glory of the machine tool. It does shorten the hours of labor. It does give men necessary leisure for cultural hobbies and create art pursuits. It gives men more leisure than masses of men ever had before in the history of mankind. But that it throws men out of work is just another figment of the imagination of clever people who love to turn a phrase. It is another one of those self-evident truths that is not so.

Let us return for a brief moment to Arkwright's Spinning Jenny. By 1840 the machine had been developed so much that it took only one man to do the work that would have required 320 men to weave in 1769. By 1855 it had developed to the point where one man was doing the work formerly requiring 700 men in 1769. Now the average critic of the machine-tool civilization looks at these figures and asks the question, "What I want to know is what did you do with these 699 men?" Well, in 1830 there were exactly 195,000 men and women working in textiles. By 1914 this had expanded to 689,000 persons so engaged. The population in 1830 was 23,028,000 people. This grew to 45,221,615 in 1914. In other words, the population just about doubled, but the workers brought into the textile industry multiplied some three and one-half times.

Perhaps no country in all the world has had the rapid technological development we have had since about 1870. This year marked the beginning of our mechanization of industrial techniques. Between 1870 and 1930 our population increased 218 per cent, and it should be pointed out here that our population increased twenty times as fast as it did anywhere else in the world. But those gainfully employed in this same period increased 291 per cent. In 1875 we had 324 persons out of every 1000 employed. By 1930 we had 400 persons out of every 1000 employed.

After 1930 have we gone too fast, have we introduced too many machines? The machine tool industry was not spared from the effects of the depression. In fact, it suffered as heavily as did other industries. Many a shop in the Cincinnati, Rockford, and New England territories was virtually, if not absolutely, shut down in 1933, and there was little, if any, production of machine tools. Why blame the continuing effects of the depression on the machine tool being produced, when it never was produced? You cannot make bricks without straw. You cannot displace men by machine tools which never were built.

There is another significant fact which stands out today and that is that if the machine tool were in control of the situation, then today our machine tools would be working while men would be standing idly by. Tools would be doing the work of the people while men were displaced. In 1929 one per cent of our men were unemployed and there was

no idle machinery. In 1933 at the depth of the depression 25 per cent of the men were unemployed and there was 22 per cent idleness among machines. In 1938 20 per cent of the men were unemployed and 27 per cent of the machines were standing idle. The answer is clear. Put the machine tools back to work and the slack of unemployment will be taken up. It is in a sense not our idle machines which cause unemployment. It is not our working machines for they cause employment. The answer to the unemployment question lies far beyond the machine tool, and it is seemingly unfair to make the machine tool carry the burden of the guilt.

The Other Side of the Picture

So far we have been whitewashing the machine, and a great deal more could be said of the machine and its tools—how they shorten the hours of labor, take the heavy work out of the hands of men and generally increase the standard of living; but there are other sides to the question, for there are times when the machine tool does displace labor and an answer must be sought to the problem.

Machine tools at times temporarily and even permanently displace labor. There are comparatively few industries in which this takes place, but they are significant in that the voice of the minority speaking has led to the claim that in all cases machine tools do displace labor.

In the case of the automotive industry displacement in most cases has been temporary. The old-time horse-buggy builder has been displaced gradually by the motor-car builder, but the process did not take place over night and the old-timer had time to accommodate himself to the change in affairs and, if he were flexible enough, he could change his trade and take on a new skill. Sometimes he was too old or too inflexible and could not adjust himself and so he fell by the wayside. It is unfortunate and very hard luck on the man so displaced, but it is the penalty we must pay for progress. Fortunately, however, most men do so adjust themselves and there are many stories of men who, finding their skills no longer required in the old trades, accommodated themselves to the new ideas and made a recovery.

So far we have done little to encourage this flexibility, but there is promise for the future in the growth of our trade schools where young men and women will get the advantages of a fundamental trade's education which will be invaluable to them in later years.

A significant figure is found in the 1930 census. A total of 3,633,896 persons reported being unemployed, but out of this total only 10,651, or less than one-third of one per cent, reported "machinery introduced" as the reason for such unemployment. It is safe to assume that the installation of this type of machinery does not take place without the knowledge of the worker whose means of gaining a livelihood is threatened by it.

At any rate, let us consider this percentage.

Coal Mining

The coal mining industry is often charged with the criticism that it is rapidly becoming mechanized and that men are being displaced by the process. Coal at one time, some twenty or twenty-five years ago, held a superior position in that it had few competitors. Within recent years this position has been challenged and now oil and gas are looming up as very serious competitors. So much so, in fact, that notwithstanding our growing industries, and our growing use of horsepower, the demand for coal is at a steady horizontal level, if, in fact, it is not dropping. Mechanization of the mines has brought about lower prices of coal, but higher wages to the miners have tended to offset this somewhat. Coal has the potential power of being a cheaper commodity due to mechanization.

But our large power plants were increasing their efficiency. Steam was being produced at unheard-of low quantities of coal burned. Oil-fired and gas-fired furnaces were making great inroads in the use of coal, so coal did not respond to the stimulus of lower prices. The demand and the consumption of coal failed to increase and, as we said, mechanization was being introduced. The result was obvious. Miners were laid off and there were few places to go. The statement has been made with truth, "Once a miner always a miner," and these men had their skills acquired through many years but had no place to use them. Some did gravitate up to the plants in the rubber industry and adjusted themselves to the new technique of making tires, but to a majority of the men there was nothing to do and they did it. Men were displaced by the coal cutter, the loader and the other mechanized devices used in the mines of today. It is a tragic story and there is little relief. For the old man who has spent the greater part of his life in the mine there is no relief. He is too old to take on any new work. But for the young man who has known the mines only a few years, he can turn his aptitude to some of the newer trades which are opening up, and so reach into a new life. Here again, blame not the machine tool entirely. It should bear its share of the blame, but place the blame on economic competition of the two new fuels and on the increasing efficiency of our big power units.

Cigar Manufacturing

Let us turn to another industry in which mechanization has played an important part, namely, the cigar-making industry.

Today ingenious power-driven machines semi-automatically perform the cigar-making operation themselves. Yesterday this process was all done by hand, and the workers were very skilled. These machines have led to a reduction in the amount of labor required of about 52 per cent as compared with yesterday's process. In terms of production costs this figure represents a difference in favor of the mechanized process of at least $3.00 per 1000 cigars on the basis of wage rates previously set in 1936. This factor has brought about a reduction in the size of the labor force required by the industry. The industry employed 112,000 wage-earners in 1921. In 1935 this total was reduced to about half, to about 56,000 workers.

A disturbing factor in the situation has been that the new men taken on to man the machines have not been recruited from the ranks of the older cigar makers. These men were recruited generally and directly from the ranks of unskilled labor. It is estimated that by 1935 about 44,000 such hand workers had been removed from the industry and that new jobs had been provided for about 17,000 new workers brought in to run the new machines.

At first sight this would seem to be a complete indictment of the machine tool, but the above figures do not tell the whole story. During this period, 1920 to 1936, there has been a reduction in the total volume of production of cigars amounting to more than 36 per cent. In other words, production and sales of cigars did not respond to the stimulus of lowered prices. It was said some time ago that what the country needed was a good five-cent cigar. Well, we have it, but are not smoking it. If cigar smokers had responded to the effect of the lower prices and therefore there would have been more cigars smoked, although there might have been a shift in the type of worker, there should have been a net result of more workers employed.

Instead, the public changed its smoking habits and proceeded to take up the cigarette, which in its turn has shown a phenomenal increase in consumption. We have no figures, but it is possible to theorize that the increase in cigarette manufacture might have taken up the slack of cigar manufacturing. If cigar makers had been flexible in their skill, they could have switched from cigar making to cigarette making, for it seems likely that taking the total figures of employment in pipe, cigar and cigarette smoking they may have shown an increase.

These theories, however, do not help the unfortunate cigar maker who is out of work and who has no place to go to realize on his accumulated skill. Like the coal miners, the situation is tragic for these men, but it is one of the prices we have to pay because of economic changes. The machine is partly to blame, but not entirely; other causes have entered the picture.

It has been mentioned at times that there are few figures. We have practically none. Just as it seems impossible to get accurate statistics on the number of unemployed, so it is impossible to get figures on those unemployed by

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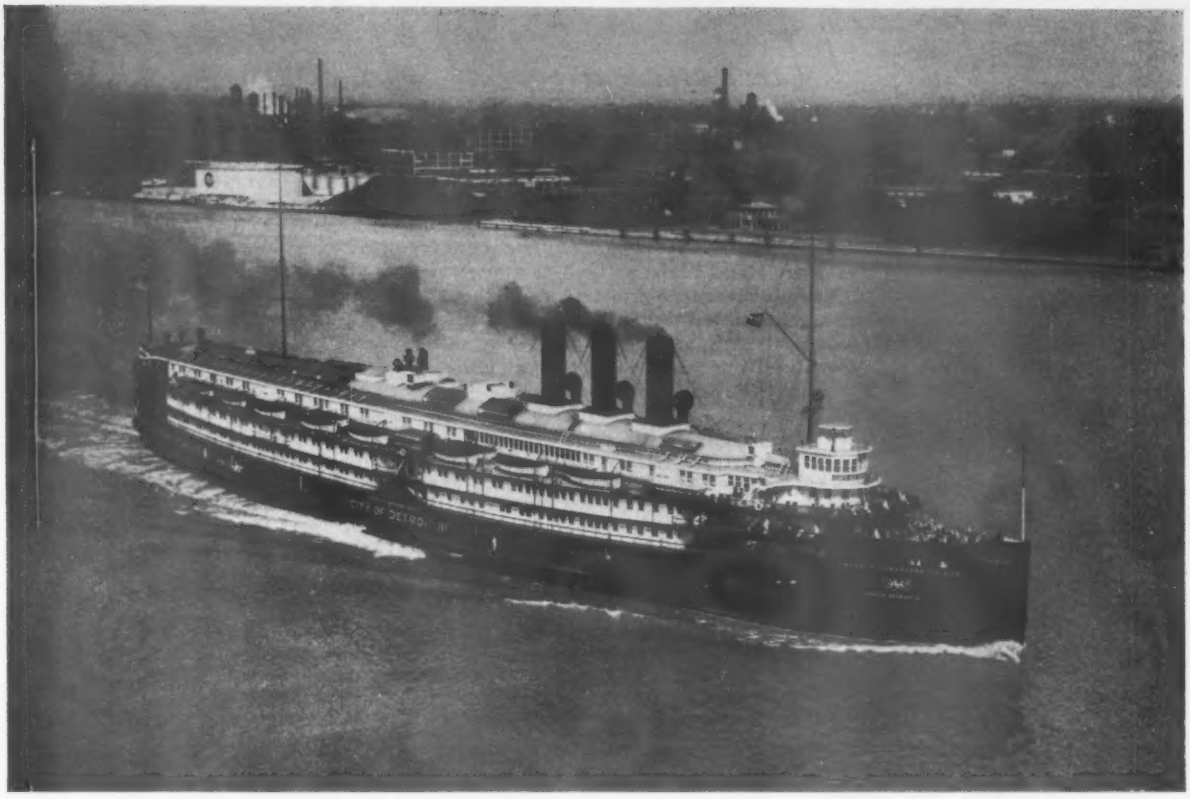


"Detroit" Heads for Cleveland via Steamer

ABOVE you see a picture of the boat that will carry some five hundred A.S.T.Eers and their friends from the Detroit area to the National Machine Tool Builders' Show and the Machine Tool Congress and National Meeting of the American Society of Tool Engineers. At the time of this writing a great many reservations have already come into Detroit headquarters indicating that the charter for the special boat to make this trip in behalf of the Detroit Chapter of A.S.T.E. will be well oversubscribed.

Committeemen, working on these arrangements, are reminded of the same trip made by the Detroit Chapter in September, 1935, when, with a total membership in this chapter of four hundred, more than six hundred Tool Engineers made the trip. This time, however, Detroit Chapter has many more members in the Detroit area (not to mention the thousands of members outside of Detroit) who want to make the trip with their friends and fellow associates, and at the same time, enjoy the special low rates to be had on this excursion via one of the largest inland lake steamers in the world.

While this page is going to press, complete arrangements have not been fully completed, but it is tentatively arranged that the boat will leave the D & C docks at the foot of Third Street in Detroit, Thursday evening, October 5th, at 11:30 p.m., arriving in Cleveland the next morning at 7 a.m. Prices range from $10.50 per person to $30.00 depending upon the accommodations desired. These prices include all expenses to and from Cleveland, as well as hotel accommodations for the three nights that you will be gone, as well as the banquet ticket ($2.00) for the A.S.T.E. National Meeting.

Following are types of accommodations offered and the prices:

		Per Person
Inside Staterooms	Double Occupancy	$10.50
Inside Staterooms	Single Occupancy	12.50
Outside Staterooms	Double Occupancy	11.50
Outside Staterooms	Single Occupancy	14.50
Rooms with toilet	Double Occupancy	12.50
Rooms with toilet	Single Occupancy	17.50
Parlors	Double Occupancy	14.50
Parlors	Single Occupancy	22.50
Parlors	Double Occupancy	16.50
Parlors	Single Occupancy	26.50
Parlors	Double Occupancy	18.50
Parlors	Single Occupancy	30.50

Detroit A.S.T.Eers and all others who are planning to make this trip to Cleveland are urged to get their reservations in immediately to National Headquarters, 2567 W. Grand Boulevard, Detroit. Your reservation and tickets will be mailed to you promptly or will be delivered to you by Detroit Chapter Committeemen. Select the type of accommodations you desire, then send your check for the correct amount to American Society of Tool Engineers. Don't delay as the total number of accommodations is limited to the capacity of the steamer. Remember the price includes boat fare both ways, stateroom accommodation both ways, hotel accommodations at Cleveland, and your ticket to the A.S.T.E. Banquet Meeting, Friday evening, October 6th, the second session sponsored by A.S.T.E. in the Machine Tool Congress.

New Machines and Tools Appear as Machine Tool Show Nears

Equipment manufacturers throughout the country have developed many new machines and tools, as well as many refinements of standard models. Years of research and testing of these many new developments will be culminated with the biggest display, yet known, in Cleveland—October 4th-13th. A few of these are described here, while many more will be shown in the next issue.

Dayton Rogers New Model Pneumatic Die Cushion

The Dayton Rogers Mfg. Co., 2830 13th Avenue, South, Minneapolis, Minnesota, have added to their line a new model, single unit, "C," Pneumatic Die Cushion. These new general utility cushions are made in six (6) sizes, having a piston diameter from 6" to 16" progressing by 2", and a drawing capacity from 3" to 7". No surge tanks are necessary in the drawing of shells up to a depth of 1½".

This model cushion is so designed that it may be directly attached to the bottom side of the bolster plate of the average inclinable or straight side punch press.

When the die cushion is not needed, such as in blanking and piercing work, and when the cushion is not under air pressure, the air in the cylinder may be "bleed" allowing the pin plate to drop down or retreat to the bottom of its maximum drawing capacity—thus allowing the blanks and pierced slugs to drop through the free opening in the bolster plate. If the press is inclined, they will automatically drop off the pin plate to receivers below the press.

These model "C" cushions are furnished with a pneumatic regulator and gauge which automatically determines the air pressure used in all cases and maintains a predetermined constant pressure on the cushion cylinder at all times.

"Standard" Precision Grinders

Standard Type BPA Precision Grinders, developed by The Standard Electrical Tool Company, 1933 W. 8th St., Cincinnati, Ohio, can be furnished for both internal and external grinding by means of interchangeable spindle units. These grinders are available in sizes ranging from ¼ HP to 10 HP, for application to lathe, planer, boring mill, milling machine, etc.

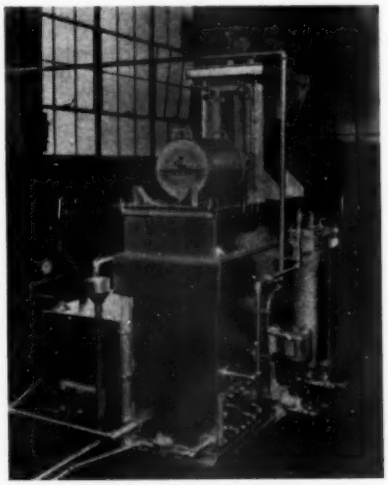
Power is transmitted from the motor to the grinding spindle by means of a belt drive, which insures obtaining the correct peripheral speed on the grinding wheel. The wheel overhangs the front of machine creating a minimum of interference with the work. Grinding on centers is accomplished by means of vertical hand adjusting screw for raising or lowering the spindle assembly.

Either an open or an enclosed type of internal spindle assembly can be furnished, these being interchangeable and available in various lengths to meet diversified requirements.

One of the important features of this equipment is the ease and speed with which the change from external to internal grinding can be made. The spindle assembly is held in position by two clamp screws and can be removed from the housing as a unit. A slot in the spindle housing accepts a dowel on each spindle unit, assuring a definite location for the spindle; thus, the change is completed with a minimum of effort and time.

Special 1-Dip Detrex Degreaser with Rotating Baskets

An important new development in which degreasing can be applied to cup-shaped work, is effected through the rotating basket design of the new Detrex Degreaser illustrated herewith. This machine has been recently developed and marketed by Detroit Rex Products Company, 13009 Hillview Avenue, Detroit, Michigan.



One-dip, rotating basket design of Detrex Degreaser, equipped with continuous filter and continuous Detrex Solvent Still. This view is from the loading-unloading station, and shows the formed rest for quickly placing and centering basket of work on driven spindle.

Outstanding economies in the cleaning of cup-shaped work are made by this new rotating basket design. It is used on work which would otherwise tend to trap solvent and cause heavy carryout. Work comes from the degreaser clean, warm, and dry—free from the last trace of solvent vapors, chips and abrasive. Engineering balance of heat input against production, together with high capacity water jacket condenser and other features, which maintain the vapor line at the mid-point of the condenser, have effected further cleaning economies.

This degreaser consists essentially of a one-dip or liquid-vapor design with storage tank and a special automatic elevator mechanism which raises and lowers the rotating baskets. A continuous filter shown at side of machine, is used to keep the boiling chamber free of insoluble material, and a continuous operating Detrex Solvent Still is used to remove oil contamination. By this means, the work is always immersed into clean solvent, and a final pure-vapor cleaning action is given as the work is raised out of the boiling solution.

A clean solvent storage tank is located at the rear side of degreaser. The elevator drive mechanism is shown on a platform above the structural work (hood shields have been removed from the upper structural work in order to show details of elevator mechanism and the rotating basket for holding the work). The elevator drive is effected by a combination right-angle-geared-head motor and brake, complete with a reversing switch, vacuum tube time relay, limit-switch, and push button station.

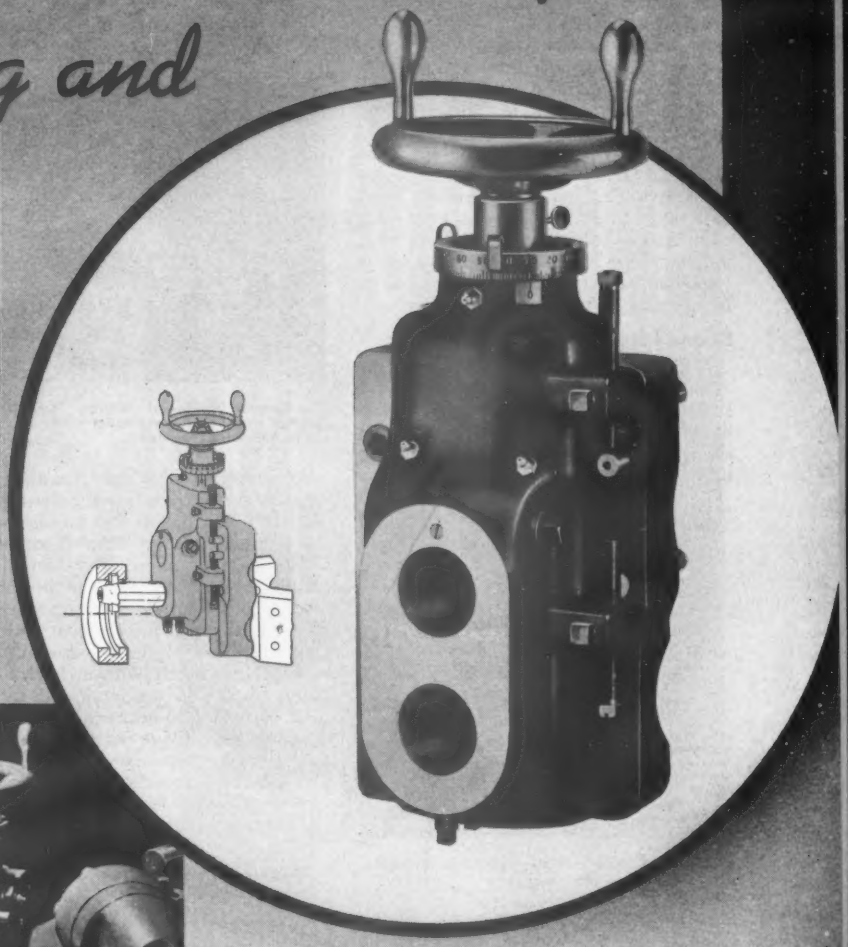
Electrical controls, water separator, and vapor trap are located on end of machine opposite the loading-unloading station. The boiling compartment has a removable cleanout door and drain valve and is equipped with a steam jacketed bottom and steam pressure relief valve.

The drum-shaped mesh basket with which this machine is equipped for rotating and draining the work, fits over a spindle which is attached to the elevator mechanism and has a gear and pinion device to cause rotation of the basket during its descending and ascending travel. A push-button station located adjacent the loading end operates the elevator drive mechanism, while limit switches and a time interval control govern the travel of the elevator and basket. After the set time interval for cleaning in

(Continued on page 22)

The Last Word For Boring... Back Facing and Recessing!

THE NEW WARNER & SWASEY SLIDE TOOL



• This new Slide Tool, developed by Warner & Swasey, is probably the most important tool on your turret lathe for small and medium lot production. Its new design permits greater accuracy and quick set-up on rough and finish boring, recessing, groove cutting or back facing operations. Here's the reason:

A large graduated dial permits quickly adjusting the cutter—adjustable stops limit the cutter travel on recessing, grooving and back facing work. The lower hole may be lined up with the center line of the spindle.

We'll be glad to demonstrate this new heavy duty Slide Tool or any of the other new and improved Warner & Swasey tools now available. Just call in your nearest Warner & Swasey representative..

WARNER & SWASEY
Turret Lathes
Cleveland

The complete and modern line of turret lathe tools is covered in this new Warner & Swasey Tool Catalog and Manual. It will be sent on request.

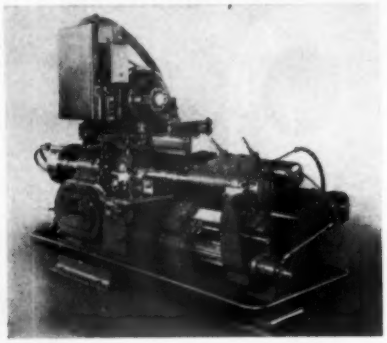
"YOU CAN TURN IT BETTER, FASTER, FOR LESS . . . WITH A WARNER & SWASEY"

the boiling solution, the load returns automatically to the loading-unloading station.

This rotating-basket design of degreaser is manufactured in various sizes ranging in capacity up to two tons per hour to suit individual requirements. The unit shown herewith has the following overall dimensions: Length, 4 ft.; Width, 4 ft. 8 in.; Height, 7 ft. 2 in. The operating height to center line of basket spindle is 4 ft. 8 in. The rotating baskets are 12 in. diameter by 15 in. long. The solvent capacity of the boiling chamber is 61 gallons, and the storage tank is of sufficient size to hold all of the solvent from the machine. The approximate weight is 1,600 lbs., not including accessory equipment and solvent still.

Seneca Falls Announce New Model R-14 Lo-Swing Lathe

The Senaca Falls Machine Co., Seneca Falls, N. Y., have announced a new, heavier Model R Lo-Swing Lathe to be known as the R-14. The Model R-14 is a fully automatic lathe equipped with the



Seneca Falls new heavier model R Lo-Swing, to be known as Model R 14.

Seneca Falls all-mechanical Quick Change-over Mechanism, which makes it possible to change the stroke by merely setting a graduated dial. This lathe handles heavy multiple tool turning work 10 to 11" diameter and up to 36" between centers.

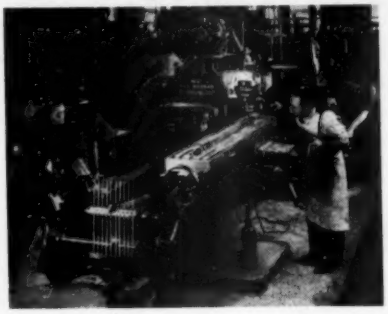
Model R-14 is now the senior member of the Lo-Swing line and incorporates the design and construction features which have long distinguished Lo-Swing Lathes. It is fully mechanisal and so simple in construction that it is easily understood and can be serviced by any mechanic.

The machine illustrated above is equipped with a special motor-driven Tailstock to provide long travel. All Model R-14's can be equipped with an overhead Third Arm. This machine weighs slightly over 7 tons with average equipment.

Synthane Extends Van Norman Milling Equipment

In line with a consistent policy of plant equipment modernization, the Synthane Corporation of Oaks, Pennsylvania, well-known fabricators of laminated phenolics, have recently made an important addition to their milling department.

A few years ago, Synthane installed a small Van Norman Universal Miller, and tested it over a wide variety of jobs, ranging from the smallest piece conceivable to jobs that utilized the entire capacity of the machine. This machine worked out so well that another one, of greater capacity, was soon installed.



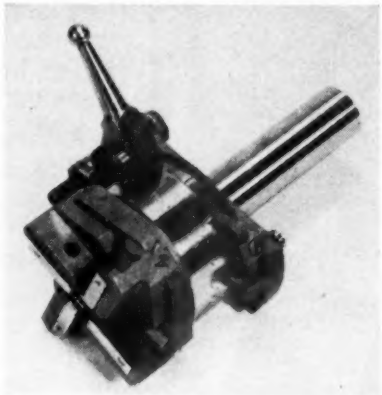
VanNorman Universal Milling Machine with special work table movement that can handle up to 38" longitudinally.

Then just recently they installed a still larger Van Norman Universal with a special table movement that handles up to 33" longitudinally. The flexibility of these machines affords Synthane the capacity to mill any type of production work from the smallest job up to a piece 38" long, by the full vertical and horizontal range of the largest machine.

Van Norman Universals enable Synthane to handle economically any job from one piece to many thousands. And a further advantage is realized by the swiveling cutterheads which eliminate special angular cutters, and permit the operators to get practically any angle on the piece being machined, without special tooling.

Jones & Lamson New Die Heads

The Jones & Lamson Machine Company announces two new die heads, the 16S and the 16SB. The model 16S die is designed for use on small hand screw machines. This model is provided with an adjustable pull-off and a hand locking lever.



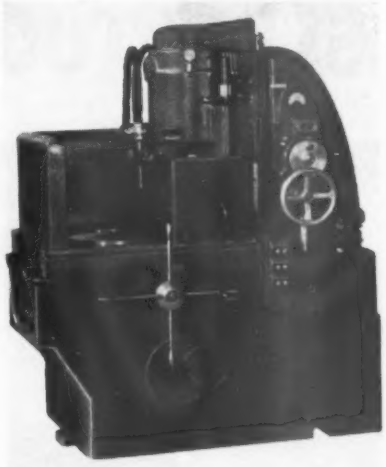
New Jones and Lamson die head, Model 16 S

The model 16SB die has an external trip and is recommended for use on No. 0 and No. 00 Brown & Sharpe Automatics. This die is designed so that it cannot open during the indexing movement on high speed machines.

The models 16S and 16SB Dies are of the same general construction as the J&L Tangent Dies except for the chasers, which, although of the flat type, are equivalent in section to a tangent chaser. Both the top and bottom of the chasers are provided with chamfer and top rake. After they become dull on the top, they may be turned over, making them equivalent to two sets of ordinary radial type chasers. The chasers are ground in the thread form after hardening. Each chaser is secured to the chaser-holder by a single screw which forces it against two ground surfaces. The chasers may be resharpened.

Blanchard New Surface Grinder

The Blanchard Machine Company announce an entirely new small Blanchard Surface Grinder, the No. 11, which supersedes the No. 10 Blanchard Grinder. The new machine considerably surpasses the No. 10 in capacity, power and rigidity and is capable of very fast work. Its larger wheel operating at a lower wheel speed results in faster and cooler grinding with less wheel wear.



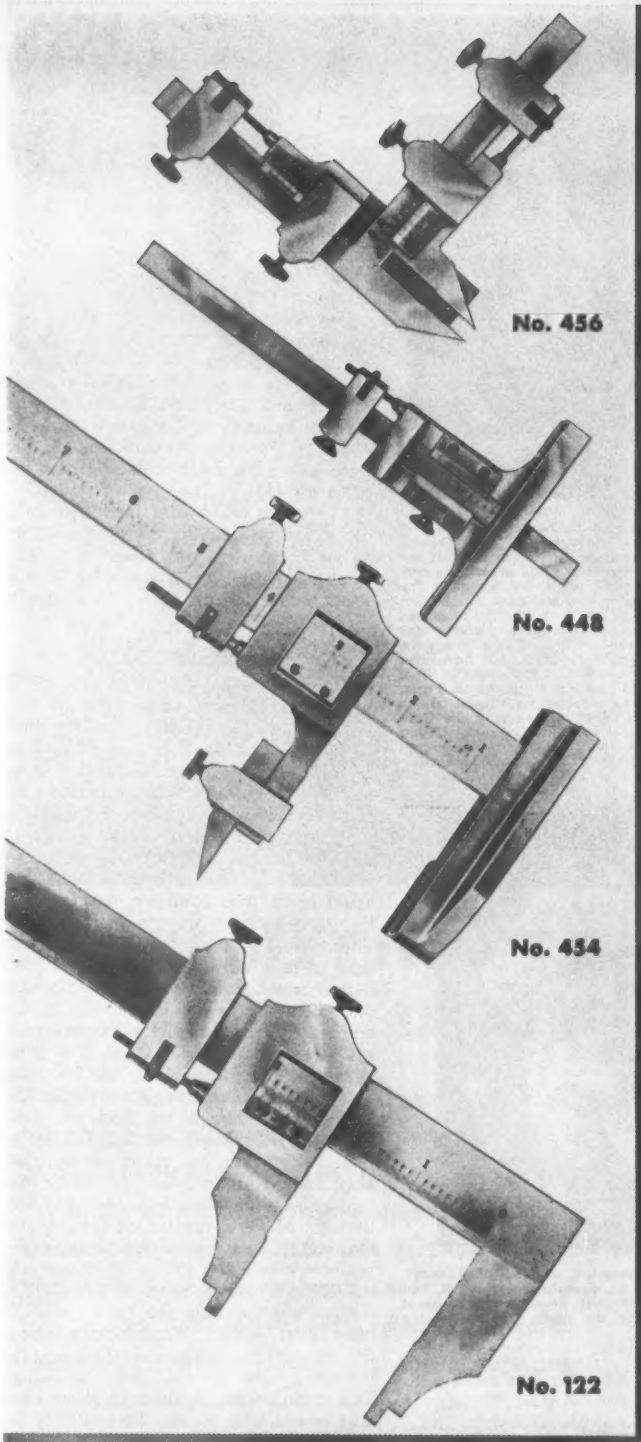
New small Blanchard Surface Grinder, No. 11.

In its design special attention has been given to ease and speed of handling and all controls are conveniently placed for quick operation with a minimum of effort.

The machine is small and compact with weight distributed where it will produce the maximum rigidity. Numerous tests on one of these machines that has been in service for over a year show it to be exceptionally rigid as shown by the short time required to "spark out" and the accuracy of the work produced.

The No. 11 Blanchard Grinder uses a cylinder wheel 11" outside diameter, 5" deep and 9" inside diameter driven by a 15 HP induction motor directly on the wheel spindle and has a capacity for grinding work up to 20" diameter by 8" high under a new wheel. It is driven by a total of four motors each direct coupled to its load. One of these motors provides for rapid raising and lowering of the

(Continued on page 38)



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The accuracy of Starrett Vernier Height Gages, Depth Gages, Calipers, Gear Tooth Calipers, Dovetail Calipers and similar vernier tools goes without question. But along with unfailing accuracy, Starrett Verniers give you the perfection of design and finish that is essential with precision tools of this type . . . which is why you'll find that Starrett Verniers are standard equipment in the best shops wherever you go. For a description of the complete line of Starrett Precision Tools, Dial Indicators and Hacksaws, see Starrett Catalog No. 26 T. A copy free on request.

THE L. S. STARRETT CO.

World's Greatest Toolmakers
Manufacturers of Hacksaws Unexcelled
Steel Tapes, Standard for Accuracy
Dial Indicators for Every Requirement

ATHOL, MASS., U.S.A.

Standardize on

STARRETT TOOLS

BUY THROUGH YOUR DISTRIBUTOR

Chapter Doings ▲▲▲▲▲▲▲▲ By George J. Keller

Detroit chapter is really going to town with their arrangements for going to Cleveland. A large steamer—one of the largest of its kind in the world—is being engaged for a special trip leaving Detroit Thursday evening, October 5th, and arriving in Cleveland the next morning. Detroit's arrangements include an all-expense trip at very reasonable rates and in a price range to suit everyone's need and purse ranging from $10.50 per person all the way to $30.00. The price includes transportation to and from, stateroom accommodations as well as hotel accommodations, and the $2.00 ticket for admission to the banquet and A.S.T.E. Session of the Machine Tool Congress on Friday evening, October 6th, when Prof. John Younger, Chairman of the A.S.T.E. Fact-Finding Committee, will present his second report on the findings of his committee which has been at constant work since our own Show in Detroit last March and when Prof. Younger gave his first report.

Already more than a hundred reservations have been received and it is anticipated that several more hundreds of A.S.T.Eers will make reservation for this trip.

In spite of hot weather, vacations, etc., **Hartford** Chapter has been far from idle. Chairman "Simon Legree" Morris has been cracking the bull whip over us all and has turned out a really fine midsummer bulletin to all members and friends, giving them an excellent idea of what has been going on. Our speakers' schedule for the coming season is complete and will be shown in our Program Roster Booklet now in the works. New members are rolling in and the machine seems to be clicking in good shape for a snappy season starting with our opening meeting on September 25th.

Mr. James H. Vogel has been promoted from Assistant Works Manager to General Works Manager of the York Ice Machinery Corporation.

Mr. Vogel has been with the Corporation since 1915, when he started serving his apprenticeship as a Machinist. He continued his studies and graduated from Pennsylvania State College in 1923. During the course of his employment he has been an outside erecting engineer, an engineer on special development and later an asst. superintendent under the very capable leadership of his father, Mr. C. W. Vogel. In 1934 "Jim," as he is known to his associates, was appointed Asst. Works Manager, the position he held until his recent promotion.

Mr. M. L. Fry has been promoted from Foreman to Supervisor of the Tool Room at the York Ice Machinery Corporation. Mr. Fry has complete charge of production of special tools used in mass production in the entire plant. "Lloyd," as he is known to his men, has been with the Corporation for the past 38 years.

Two Past Presidents of the American Society of Tool Engineers met recently in Paris, France. Here you see a snapshot made in front of the Cafe De La Paix located in Paris at what is considered the "cross roads of the world." The taller gentleman is none other than Mr. Walter F. Wagner. With him is T. B. (Bert) Carpenter, third President of A.S.T.E. This picture was made on Mr. Wagner's second trip overseas, from which he returned recently. Mr. Carpenter is employed by the National Automatic Tool Company; he is at present stationed in Paris. Mr. Wagner says he enjoyed his second trip to Paris more than his first. He says of the Cafe De La Paix—"it is a very lively place—if you stand on tais corner long enough, you are supposed to meet someone you know . . . always."

James H. Vogel, member of Central Pennsylvania Chapter No. 22, American Society of Tool Engineers who has just been made General Works Manager of the York Ice Machinery Company.

Mr. Chas. Mann, Membership Chairman of Chapter No. 22, has resigned his position as Tool Designer with the York Ice Machinery Corporation and has accepted a similar position with the Landis Tool Co., at Waynesboro, Pa.

The officers, members and friends of **York** Chapter wish "Jim," "Lloyd" and "Charlie" the best of everything in their new work.

We have finally obtained that chapter out on the West Coast we have all been wanting so much. Apparently there are a lot of Tool Engineers on the Pacific coast that have been neglected by A.S.T.E. thus far, for we should have had a chapter on the coast long ago. However, on July 20th some forty up-and-coming Tool Engineers of the Los Angeles area chartered their chapter as a regularly constituted branch of the American Society of Tool Engineers. Among the charter membership of this chapter are many Tool Engineers of the aircraft industry in California. James R. Weaver, President of A.S.T.E., traveled across the country from Pittsburgh, while Ford R. Lamb, Executive Secretary of A.S.T.E., traveled from Detroit to officiate at the ceremonies. While on this trip to the coast Mr. Lamb returned east via Seattle, Washington, where he endeavored to stimulate interest in a chapter of A.S.T.E. there.

ST. LOUIS

"Boy—Oh—Boy, what an outing. The weather man gave us exactly the kind we wanted. Just warm enough to make those cold bottles of amber fluid go down with a merry gurgle and a smack of the lips. Plenty was consumed but no one left with his cargo shifted, so that he could not navigate a straight course. That fried chicken will forever remain a memory never to be forgotten. Fried by a real southern darkie. One hundred and twenty-two were present. There were attendance prizes for every one; in fact there were about 140 attendance prizes so that some left with more than one. Some of the major prizes were a golf bag, 3 electric coffee makers, 2 electric fans, 3 lamps, 3 sets silverware, a carburetor, an electric razor and others too numerous to mention. We never realized we had so many friends who believe the A.S.T.E. is the best society yet, but when those prizes kept rolling in until we had more than one apiece, then we knew we are well thought of. We appreciate that, cannot express in words just what to say but—well—we will just say to all those who contributed—"Thanks a million." The outing was held on the banks of "Ole Man River" about 50 miles northwest of St. Louis. This is a private club and the use of it was donated free of charge. The outing was planned to allow each and every one to do that which he pleased. No games or contest being planned, each one did what he pleased, —pinochle, poker, softball, horseshoes, badminton, darts, target shooting, swimming and both kinds of crap shooting, the dice kind and the mouth kind. The Sheriff dropped in on us, in a Gay Ninety mustache, complete with his star of authority and after making a couple of pinches for the amateur photographs, let us go, because he could find

(Continued on page 54)

SPECIFYING FOR DEPENDABILITY PLUS

Failure in the motor crankshaft of a piece of fire fighting equipment may mean the difference between a small fire and a large one, even between life and death.

That is why a leading manufacturer chooses Chrome-Molybdenum (SAE 4140) steel for this vital part. It has the requisite strength and toughness. And, most important, it has good fatigue strength to meet the continually alternating loads which are characteristic of crankshaft service.

Furthermore, the uniform response of this steel to heat treatment assures the consistent qualities essential in volume production, while its comparative inexpensiveness and ready machineability in the heat treated condition keep costs down.

Re-checking your own specifications may disclose opportunities for increasing dependability at little or no added cost by the use of Molybdenum steels. Our book, "Molybdenum in Steel", will help you find them. It is sent free to interested production executives and engineers on request.

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MOLY

Production Perspectives

News of Mass Manufacturing from Everywhere

Mass production industries, judging from the automobile industry are in a good position to forge ahead with even greater production scheduled for the few months ahead. For the first seven months of this year automobile factory sales show a fifty-six per cent increase over last year. July sales, this year, were some forty-five per cent ahead of July, 1938. Production with a number of Detroit auto factories is already in full swing to fill dealer stocks that are substantially reduced, as compared to a year ago. M. M. Gilman, president of Packard Motor Car Company expressed confidence in the outlook for big automotive production for the remainder of the year, saying, **"The national income is increasing faster than outgo,** and **conditions seem ideal for increased employment,"** said Mr. Gilman. **"The automotive industry** is in an unusually **favorable position** to facilitate recovery throughout American industry, and the present attitude of automobile buyers indicates a highly favorable fall and winter volume."

Mid-West

A **new world's record for hot rolling steel** was **established August 10 at the Cleveland Republic Steel Corp.'s continuous strip mill in the Flats.** Howard B. Carpenter, local district manager, said. **Nineteen hundred gross tons of finished coils,** amounting to 35½ miles of steel averaging 55 inches in width were **rolled between 7 a. m. and 3 p. m. Previous record** for hot rolling in a single eight-hour turn, which represents seven hours actual rolling time **was 1887 tons.** Mr. Carpenter said. Placed in operation two years ago, the Flats plant is the world's fastest and widest continuous strip mill.

A deal whereby the **Fairchild Engine & Airplane Corp., the Haskelite Manufacturing Corp. and Howard Hughes, famous flyer,** will **collaborate in manufacturing low-priced airplanes** in Cleveland, has been **announced by George R. Meyercord, Jr.,** vice president **of Haskelite Corp.** Following a new pattern of molding aeronautical parts, Meyercord said, the manufacturers would use in the construction of the planes a special product of wood fibers and synthetic resins fused under heat and pressure.

Republic Steel Corporation will build a Fretz-Moon continuous gas butt-weld furnace in Youngstown. Contracts for the machinery have been awarded. The furnace, costing probably $200,000, will make butt-end pipe ⅛ to four inches in diameter and in lengths up to 150 feet.

The **Cleveland Pneumatic Tool Co., Cleveland, will build a new combined office and laboratory building** at the site of its present plant, 3734 E. 78th St.

Carnegie-Illinois Steel Corp., Pittsburgh, Pa., on Aug. 1 **announced appointment of Philip M. Guba,** formerly of Detroit, as **eastern sales manager,** with offices in New York and Pittsburgh.

Harlow H. Curtice, president and general manager of the **Buick motor division** of General Motors, **said** Aug. 17 that **production** of his company's 1940 models, delayed by the recent strike of tool and die workers, **would get under way August 21.** The immediate result, he said, would be the **return to work** of **5,000 employes** and **reemployment within the next four weeks of Buick's full force of more than 11,500 workers.** Curtice explained **Buick's initial schedules call for output averaging 300 cars** a **day, increasing to an average of 650 daily** in the third week **with full production of 1,200 cars a day by mid-September.** He added that **when full production is reached** the **plants will be in operation five days a week,** on a two-shift basis, with a third shift likely in some manufacturing departments.

Edwin H. Brown, former Cleveland business executive and industrial leader, **died Aug. 17** in his home at **Grosse Pointe, Mich.** Before moving to Detroit 25 years ago, **Mr. Brown had been vice-president and treasurer of the General Aluminum & Brass Manufacturing Co., the Copeland Refrigerator Co.** and **had been associated with the Aluminum Co. of America.** Born in Chicago, Mr. Brown **attended University School, Cleveland,** and was a **member of the first graduating class.** He was **graduated in 1901 from Yale University,** where he had been a member of Alpha Delta fraternity and Wolf's Head, senior honor society. Burial was in Cleveland.

Glenn L. Martin Co., Baltimore, makers of air bombers, **announced sales for half year totaled $5,298,659 of which $1,758,148** was **obtained in second quarter.** President Glenn L. Martin declared: "One large contract for bombardment airplanes has been completed and shipped and we are now in process of changing over production equipment for a still larger output of a new and ultra-modern bomber, on which shipments will begin shortly." Company's backlog of undelivered orders was $37,835,458, he said, compared with $13,903,006 last Dec. 31. **Much of the output has been for the French government.**

A contract for seven centrifugal refrigerating machines to be used in cooling the new Social Security Building now under construction in Washington, D.C., has been **awarded the Carrier Corp.,** it was **announced Aug. 14. E. T. Murphy,** vice president in charge of marketing, **said the firm's new contract called for the "largest single refrigeration installation to be made at one time** for a single building **in the history of the air conditioning business."**

Lockheed Aircraft Corp., Burbank, California, reported Aug. 17 net profit for the six months ended June 30 of $508,860, compared to $151,075 in the like 1938 period. **Robert E. Gross,** president, **said the company's unfilled orders Aug. 1 totaled $26,372,385,** compared with $23,522,930 on Aug. 1, 1938. **The major portion of the current backlog** is composed of **orders from the British air ministry and the Australian air board** for squadrons of long-range bombers.

New England

Manufacturers in the Springfield, Mass., industrial center report trade improved "substantially" during the first six months of 1939 and the **forecast for the remainder of the year is optimistic.**

W. O. Lippman, works manager, **Westinghouse Electric and Manufacturing Company said better business activity in his plant is indicated by a 25 per cent increase in the payroll.** He said that while a portion of the late shift had been dismissed for August it will be re-engaged in September when production is revived.

Roe Clark, treasurer of the **Package Machinery Company, said business now is about up to that of 1937,** which was the best year since 1929. He added that there is a **good sign of a more general business** improvement in the diversification of orders on hand.

John C. Brooks of the Monsanto Chemical Company said, "Generally Speaking, **materials consumption in all fields is running higher than** at the same period **last year** and we **are most optimistic** over prospects for the fall season."

Col. Charles E. Speaks, president of **Fisk Rubber Corporation, said** that the **busy season,** which has **just passed made** a **"fair" showing** and that the **outlook is for continued good trade.** He said that **one of the reasons for the improvement** was the **refusal of Congress to adopt** all of the **legislation** proposed by the administration. **Executives of other firms endorsed these views. Those questioned represented Moore Drop Forging Company, Gilbert and Barker and Bigelow-Sanford Co.**

Directors of the **Simonds Saw & Steel Co.** of Fitchburg **declared a dividend of 40 cents a share** on common stock payable Sept. 15 to stock of record Aug. 26.

An **increase in employment is expected** by **United American Bosch officials at Springfield, as the result of a "substantial order" from the Ford Motor Company.** The order is **for the manufacture** of a new **voltage current regulator for generators** on Ford cars and trucks.

A **permit** has been **issued to the Van Norman Machine Tool Company of**

(Continued on page 46)

"ROTABIN" *SAVES* THESE TOOL AND STOCK ROOMS 50% FLOOR SPACE

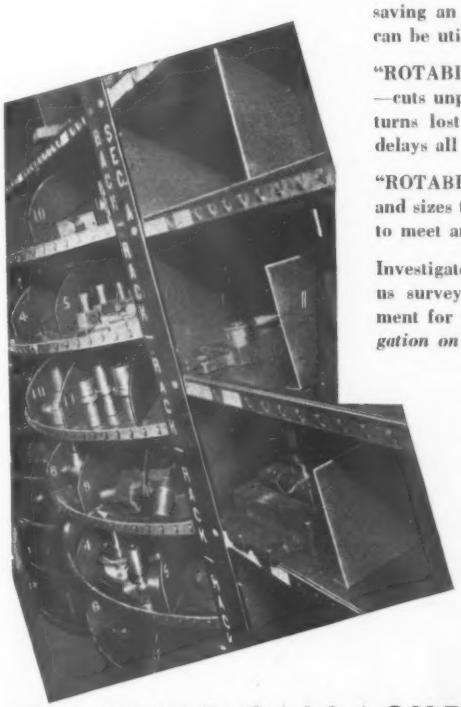
"ROTABIN" Steel Rotating Equipment is used by many of the nation's leading manufacturers to increase the efficiency in their stock and tool rooms.

"ROTABIN" equipment eliminates long rows of shelving and half the aisle space. The rotating sections bring all parts to you mechanically and quickly. Stores all "binable" items in a compact, accessable, easy-to-see manner at all times, saving an average of 50% space and time that can be utilized for other purposes.

"ROTABIN" speeds up production and service —cuts unproductive time of men and machines— turns lost motion into profits—and eliminates delays all along the line.

"ROTABIN" equipment is made in many types and sizes to fit your present set-up or is designed to meet any special needs.

Investigate "ROTABIN" equipment now. Let us survey and recommend the proper equipment for your needs. *There is no cost or obligation on your part. Write us today.*



"ROTABIN"

FOR ALL

"BINABLE"

ITEMS IN TOOL AND STOCK ROOMS

•

The FRICK-GALLAGHER MFG. COMPANY, Wellston, Ohio

PIONEERS IN DEVELOPMENT—DESIGN—MANUFACTURING—INSTALLATION OF ROTATING SHELVING

Handy Andy Says —

When this comes to hand the fall activities will be in swing; right now, the weather spelling "manana," I'll just ramble along hit or miss. Not but what there's deep—but not sinister—purpose behind my words, even when writing in lighter vein. (See if you can find it.)

Ralph Bean dropped in the other day, but whether he was back from a cruise or a photographic hunt I can't say on a/c the conversation turned—as a prelude to business—to the cocker spaniel pup the girls want. (Me too, the wife willing.) Ralph makes hobbies of dogs, boats and cameras, supports his stable by acting as Detroit representative for Hannifin Mfg. Co., Chicago. At that, he is a whale of a salesman, inclined to the conservative side. When sure that it'll work he delivers the goods, his company right behind him, backing him up. I've met their Messrs. Peterson and Maha, likeable V.P. and energetic chief engineer, both at the plant and at the Shows, and quite understand why Hannifin has taken so important a role in the development of hydraulic riveters. Look 'em up in Cleveland, along with the rest of THE TOOL ENGINEER supporters. You're going, of course. (The Hounds'll be there too.)

▼ ▼ ▼

A short thirty years ago I worked in the experimental engineering at Western Electric, New York, one of my close friends a young German engineer whom, to save him embarrassment should he or any of his friends read this, I'll call Otto. He had a fine little wife, a couple of tow headed tots, and I still wonder which charmed me the more, their open hospitality or their delightful accent. They hadn't been over long. We drifted apart; I got myself a bigger job, then, in the course of events, the Big Debate broke out, when the gods of war decreed that I could do more good making munitions than toting a gun. As a sop to my feelings (I was young and eager for adventure) there was talk of a commission and a uniform, only I couldn't see the sense of being a parlor officer. With the help we could get, them days, one just had to get into the grease now and then, which wouldn't have done a uniform any good.

One day, business bent uptown, I met a forlorn figure slouching along; puzzled glances, then, mutual recognition! "Otto! What in heck is wrong?" "Oh Andy, everything! Look, I'm a bum, my wife und kinder is starving yet und I can't get work. Everywhere they call me an alien enemy, und you know I was in the National Guard in New York already."

"Uhuh. But come along, my business can wait." So we hied to a market, loaded up with food and drove far, far into the suburbs. I choke yet when I recall his haggard wife, the gaunt children, the indescribable light in their faces when they saw the eats. Then, Heaven must have opened for them when I said, in effect: "Otto, you come ready for work in the morning."

He came, although I had to use diplomacy and threat of fist alike to quell uprising because of hiring an "alien." But, in the long run, Otto proved his loyalty; besides being a highly skilled mechanic, he shamed many an avowed 100 percenter who thought more of the silk shirts he was going to buy with his wages than of the work that begot them.

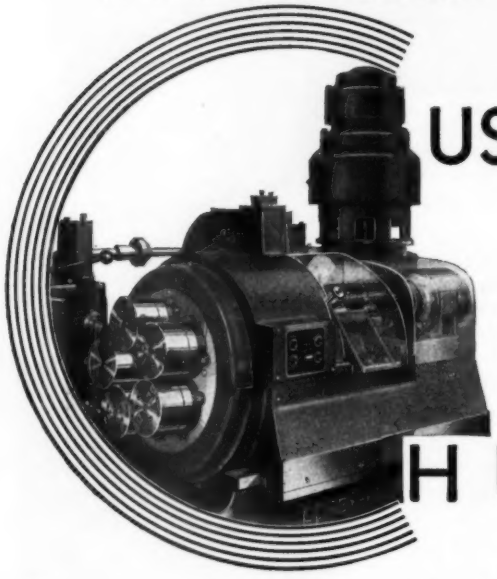
▼ ▼ ▼

I have had, and have, friends among all nationalities and among most of the professed creeds as well as atheists, skeptics and agnostics, find that most people are pretty fine when you get to know them. I like the German people, admire their thrift and honesty; millions of them have made wonderful citizens for America. Yet, few peoples were subjected to such suspicion and discrimination as American citizens of German descent during the world war, a suspicion that is spreading its dark miasma again because of the subversive machinations of a Nazi minded minority, not all of which is of German stock at that. And that holds for other

(Continued on page 30)

Be sure to visit the Cushman exhibit

at the NATIONAL MACHINE TOOL SHOW



CUSHMAN

FOR PROFITS MACHINE TOOL SHOW CLEVELAND OCT 4 to 12, 1939

Booth 2109

CHUCKS

Progress in work holding . . .

Important new chucking developments engineered by Cushman will be exhibited for the first time at the National Machine Tool Show in October. Every engineer charged with responsibility for precision production in metal working plants should be sure to see these outstanding advances in work-holding technique:

1. Dynamic Balance.
2. Hardened Steel Precision Chuck Bodies.
3. Increased jaw pressures under perfect control at all times.
4. An improved Spring-power Operating Mechanism for jaw follow-up on work where scale and unequal surfaces might otherwise cause problems in positive work-holding.
5. A new type of Segment Wheel Chuck for grinders.
6. Light, medium and heavy duty precision Chucks for direct mounting on American Standard, Cam Lock and Long Taper Key Drive Spindle noses.
7. New Spring Operated Power Chucks especially adapted to latest type multiple spindle machines.

Most of the above equipment will be exhibited under operating conditions that indicate the great advances made in working toward greater precision and simplicity and lower floor-to-floor time in production line and tool room work.

Qualified engineers and sales representatives of the Cushman Chuck Company will be in constant attendance at Booth 2109 to discuss the above equipment with you.

A world standard for **PRECISION**

THE CUSHMAN CHUCK COMPANY, HARTFORD, CONNECTICUT

CHUCKING ENGINEERS *Since 1862*

FEATURES OF P&J POWER-FLEX CONSTRUCTION

for the 5-D Automatic Chucking and Turning Machine

FORTY years' specialized experience in producing, designing and building automatic chucking and turning equipment has resulted in this highly efficient, extremely versatile and flexible, high production 5-D Power-flex. Certain advantages and features combine to produce rigidity—power—precision—and speed—and all of these result in dependable and profitable performances! Illustrated here are the Automatic Speed and Feed Changes, which play so important a role in modern, high production programs. This is fully described in relation to the other P & J Advantages, in the newly published Bulletin 108. Write for your copy.

The AUTOMATIC SPEED and FEED CHANGES

The insert at the left illustrates the SELECTOR UNIT (cover removed) through whose action the Automatic Speed and Feed changes are accomplished. Automatic clutches are power operated under dog or hand control. Changes of feed or speed can be accomplished under load—there is no strain on the dogs which simply select the desired feed or speed. Automatic Spindle Stop allows cutting tools to return to neutral without scoring the work.

The **5-D Power-Flex Automatic** *made by*

POTTER & JOHNSTON MACHINE COMPANY, Pawtucket, R. I., U. S. A.

FACTORY REPRESENTATIVES: William L. Martin, Headquarters at Factory: New England States and Eastern New York and New Jersey; A. W. Stone, 986 Kenyon Ave., Plainfield, N. J.: Western New York and New Jersey, Eastern Pennsylvania, Maryland and Delaware; G. Tell DuBois, 8-154 General Motors Building, Detroit, Michigan: Michigan and the City of Toledo, Ohio; Louis K. Voelk, 14014 Woodworth Road, East Cleveland, Ohio: Ohio—with the exception of Toledo, and Western Pennsylvania: Harry I. Schuster, 743 N. Fourth St., Milwaukee, Wisconsin: Illinois, Missouri, Wisconsin, Iowa and Indiana. **AGENCIES:** Star Machinery Company, 1741 First St., South, Seattle, Washington; Henes-Morgan Machinery Co., 2026 Santa Fe Ave., Los Angeles, Calif.; Jenison Machinery Co., 20th and Tennessee Sts., San Francisco; Wessendorff, Nelms & Co., Inc., 317 Preston Ave., Houston, Tex.; Arthur Jackson Machine Tool Co., 60 Front St., West, Toronto 2, Ontario; Arthur Jackson Machine Tool Co., 437 Grosvenor Ave., Montreal, Canada; Burton Griffiths & Co., Ltd., Birmingham, England; R. S. Stokvis et Fils, Paris, France: Rotterdam, Holland and Brussels, Belgium; Maskinaktiebolaget Karlebo, Stockholm 1, Sweden; Ing. Ercole Vaghi, Milano, Italy; Yamatake & Co., Ltd., Tokyo, Japan; (Imperial Export Co., 44 Whitehall St., New York, N. Y.); Almacoa, Zurich, Switzerland; Be-Te-Ha, Warshau, Poland; Schuchardt et Schutte, Budapest, Hungary; Bourla Freres, Istanbul, Turkey.

HANDY ANDY SAYS

(Continued from page 28)

racial stocks in America as well, impugned because of political experiment or neo-paganism in their native lands, diversions for which our naturalized citizens cannot, as a rule, be held responsible.

It has been said that Fascism and Nazism are natural results of communism; neither of the former can take root unless there is first communism. It is a case of force and counter-force. Conceded, but if so, what force or combination of forces begot communism? And kept it alive?—advertised it? Isn't it entirely possible that we, who profess Christianity, have had a negative hand in its rearing? When, in '76, the colonists declared their independence, they were imputed the radicals of the age. Yet, by comparison, they were freemen compared to the thralldom and degradation of the Russian people under the Romanoffs. An ignorant but potentially intelligent people, more than 70% illiterate, exploited, sent into war with dummy guns and dud ammunition, they took the only means at their command for freedom. It would be nice, here, to say that the enlightened peoples of the earth extend sympathy and understanding, but no! —the world aligned against them. Yet, on matured consideration, it is my belief, previously expressed in other writings, that Russia is destined to achieve a real and lasting democracy, that it will have attained that goal when the Fascists are beginning to rise against an inevitable imperialism.

▼ ▼ ▼

Now, bear with me. A naturalized citizen myself, I know something of European history—more, perhaps, than many—and besides, Russia has been a traditional enemy of my people for centuries, despite that they gave Russia the first impetus toward a modern civilization. Yet, I rise in defense of the Russian people, not their Ism. Frankly, the policies of Europe are none of our business; it is our business however, where they conflict with our own ideals, that they do not take root here. They have made but a negligible impress in Sweden and the rest of Scandinavia, in Holland and Switzerland. They cannot root in advanced societies; that has been indisputably established.

▼ ▼ ▼

They may sow their seed here, but they will not flourish, provided that they disseminate in the open, where they can be heard and rebutted. I have, personally, unbounded faith in the American people, in their innate common sense; I admire their initiative and enterprise. Assuming a detached viewpoint for the moment, I am confident that they will reject credos and experiments that prove untenable and which conflict with proven practice. All that is needed is a cessation of the din of propaganda and counter-propaganda, a lifting of the veil of censorship that clouds foreign issues. We want a little quiet, so that we can think, a little more light, so that we can see clearly. Right now, minorities make a lot of noise, but in the long run the majority will be heard. A majority, when this nation was founded, set down tenets of free speech, freedom of conscience, and assembly, and that majority still functions. As long as the majority believes in what we term democracy, democracy goes over.

▼ ▼ ▼

The foregoing is not preachment without purpose, certainly cannot be construed as a case for alien Isms. It is purely a case for mutual understanding, a respect for common rights. You know, this A.S.T.E. of ours is getting to be a big order now; we are no longer a national society, but international, and hands beckon to us from below the Equator, from across the seas. All unwittingly have we become a force for international understanding and accord, and personally, I would ask no holier mission than to be an instrument in creating good will and peace between the peoples of the earth. We Tool Engineers have built "tools for the nation," and while, because of our genesis, America comes first, we now begin to tool the world. Let the tools be for construction, not destruction. To that end, let us drink a silent toast. Gentlemen, break your glasses.

Yours humbly,
HANDY ANDY.

For Cutting Sheet Materials

- 2500 shear cuts per minute . . . follows any pattern line with ease and speed
- Weighs only seven pounds
- Cuts cleanly sheet materials up to 18 U. S. gauge hot rolled steel
- No waste — no distortion of metal
- Plugs into your light socket — AC or DC

The PIVOTED DUPLEX HANDLE

Two convenient grips make awkward jobs easy! Handle swings to side for nosing into restricted spaces.

Ask your Stanley Distributor for a demonstration — or write for literature. Stanley Electric Tool Division, The Stanley Works, New Britain, Conn.

STANLEY ELECTRIC TOOLS
"COST LESS PER YEAR"

Barber-Colman

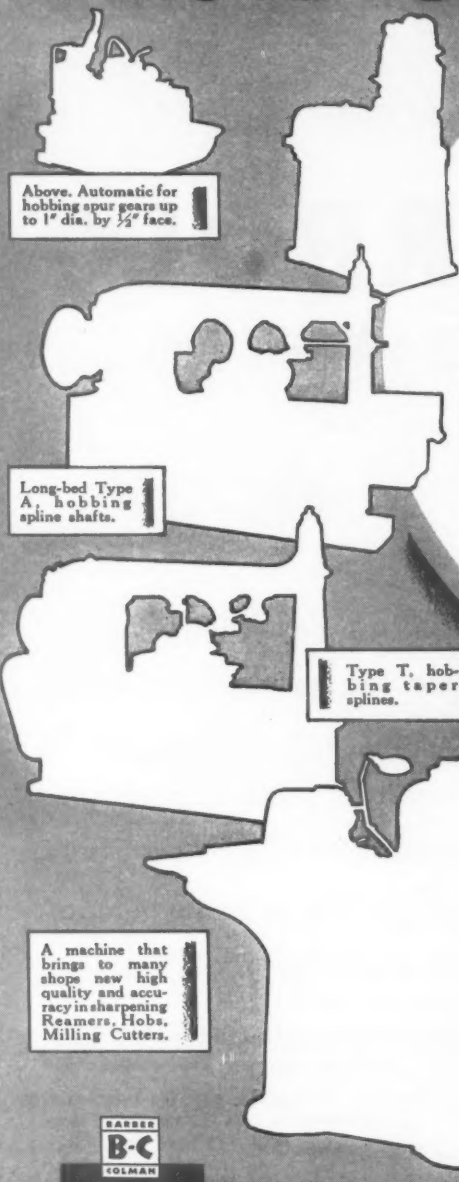
Will Be There

MACHINE TOOL SHOW

CLEVELAND

OCT. 4 to 13, 1939

Space 5601



Left. A new Hob Sharpening Machine. First showing.

Above. Automatic for hobbing spur gears up to 1" dia. by ½" face.

Long-bed Type A, hobbing spline shafts.

Type T, hobbing taper splines.

A machine that brings to many shops new high quality and accuracy in sharpening Reamers, Hobs, Milling Cutters.

A new Hobbing Machine . . . new in B-C type, size, style; new in productive capacity, speed, convenience; new in combined accuracy, finish and output.

Barber-Colman will be "there with the goods" at Cleveland, October 4 to 13 inclusive, Space Number 5601.

In operation will be a Taper Spline Hobbing Machine . . . an automatic Hobbing Machine for quantity production of precise small spur gears . . . new machines for sharpening Hobs, Reamers, and Milling Cutters . . . a new-from-the-floor-up Hobbing Machine making its first appearance.

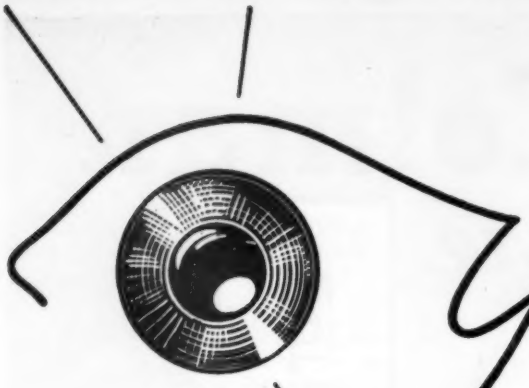
Plenty of proof that "Your Smartest Investment Today *Is* . . . Modern Machine Tools" will be found in Barber-Colman Space 5601 . . . put it on your "Must see" list.

BARBER B-C COLMAN PRODUCTS

HOBS, HOBBING MACHINES, HOB SHARPENING MACHINES, REAMERS, REAMER SHARPENING MACHINES, MILLING CUTTERS, SPECIAL TOOLS

Barber-Colman Company

General Offices and Plant ROCKFORD, ILLINOIS, U. S. A.



You'll always be within sight of

CARBOLOY

AT THE MACHINE TOOL SHOW

The Mark of CARBOLOY

Outstanding demonstrations of the new higher order of economy, speed and efficiency to be obtained from modern machines equipped with Carboloy Tools, await you at the exhibits of many leading machine tool builders.

CARBOLOY COMPANY, INC.
DETROIT, MICHIGAN

Chicago • Cleveland • Newark
Pittsburgh • Philadelphia • Worcester, Mass.

ASK AT CARBOLOY BOOTH 5300 FOR A LIST OF MACHINE TOOL EXHIBITORS USING CARBOLOY TOOLS ON THEIR MACHINE DEMONSTRATIONS

Announcing

Model 16S for small hand operated screw machines

Model 16SB for No. 0 and No. 00 Brown & Sharpe Automatics

TWO NEW DIE HEADS

THREAD TOOL DIVISION
of
JONES & LAMSON MACHINE COMPANY
SPRINGFIELD • VERMONT
U. S. A.

FOR PROFITS MACHINE TOOL SHOW
CLEVELAND
OCT. 4 to 13, 1939

Manufacturers of Turret Lathes, Fay Automatic Lathes, Automatic Thread Grinders, Comparators, Die Heads and Thread Chasers.

THE Jones & Lamson Machine Company announces two new die heads, the 16S and the 16SB. The model 16S Die is designed for use on small hand screw machines. This model is provided with an adjustable pull-off and a hand locking lever.

The model 16SB Die has an external trip and is recommended for use on No. 0 and No. 00 Brown & Sharpe Automatics. This die is designed so that it can not open during the indexing movement on high speed machines.

The models 16S and 16SB Dies are of the same general construction as the J & L Tangent Dies except for the chasers, which, although of the flat type, are equivalent in section to a tangent chaser. Both the top and bottom of the chasers are provided with chamfer and top rake. After they become dull on the top, they may be turned over, making them equivalent to two sets of ordinary radial type chasers. *The chasers are ground in the thread form after hardening.* Each chaser is secured to the chaser-holder by a single screw which forces it against two ground surfaces. The chasers may be resharpened.

TOOL ENGINEERS GOING TO SHOW

(Continued from page 9)

will start at 6:30 p.m. and will cost $2.00 per plate. Admission by dinner ticket only. John Younger, of Ohio State University, our first honorary member, also chairman of the A.S.T.E. Fact-Finding Committee, will give the second report of the Fact-Finding Committee on the subject, "Effects of the Development of the Machine on Employment and Our Standard of Living." This report will not only conclude the study of the machine itself, but will probably touch on some of the actual causes of unemployment which have been discovered through this study made by the Fact-Finding Committee on the effect of the machine. The report will be discussed by a speaker of national prominence who has not yet been selected.

It is anticipated that various chapters as well as members at large will schedule their visit to the Machine Tool Show to occur during the period of the A.S.T.E. sessions so as to enable them to attend the sessions as well as to see the Machine Tool Show. We are informed that the Machine Tool Show will be larger and better than ever before with all space in the great public auditorium at Cleveland entirely allotted with the promise of an enormous amount of new machinery.

There will be a registration fee of $1.00 to everybody who visits the Machine Tool Show, and the registration badge thus obtained will enable any visitor to attend any of the technical sessions of the complete program of the Machine Tool Congress.

It is expected that the Detroit Chapter will combine with the Toledo Chapter to charter a boat and to make the trip to Cleveland by special excursion on an all-expense ticket using the boat as a hotel at Cleveland, thus relieving the pressure on hotel space during this important period. It is also hoped that the New York Chapters which comprise the northern tier and possibly Elmira may make arrangements whereby the members of the various chapters in New York may travel by train or car to Buffalo where they may join with the Buffalo and Canadian Chapter on a specially chartered boat to Cleveland for this occasion. Details of both of these excursions are being worked out.

The scope of these sessions comprising the A.S.T.E. Semi-Annual Meeting in connection with the Machine Tool Congress and the enormous show of Machinery will make this trip well worth while for every Tool Engineer.

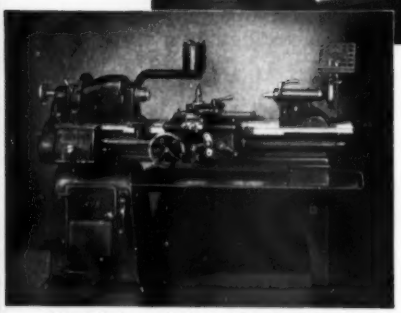
LET'S MAKE DRAWINGS

(Continued from page 12)

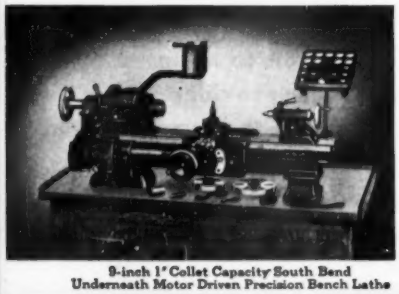
ally paid for by time lost in other departments. A drawing must be considered by many people, as a rule, each of whom, no matter how adept he is at reading blueprints, has to reconcile the various lines. Make drawings so that they can be read at a glance and the extra few minutes required for clarity are well worth while.

One could write a book on this topic without exhausting the subject; the intent here is to hit the high spots and create a little serious thought. One thing in which many if not most designers are deficient in, is the use of structural steel for tools. Structural shapes have no end of use, are light but strong, and cheap. Yet, the abortive manner in which structural steel is used in tool design is enough to give an old timer a pain in the neck. Two heavy rivets or bolts, are usually preferable to a lot of little ones, and of course, Dutchman washers or a spotface will compensate for the angular flanges of I-beams and channels. But often as not they are drawn with parallel flanges and with little regard for weight of material. Incidentally, most structural steel has standardized gagings for holes, which means that it can be ordered punched if one so desires.

One goat getter, for the designer, is the ponderous thought wasted on minor changes that do not affect the tool. There comes to mind hours consumed in redrawing a tool, when the actual difference in cost, in the actual making, amounted to but a few cents. That, incidentally, holds true in purchase, where a change from one product to another may not amount to a dollar a year but may cost a lot of money in engineering changes. Finally, the writer is not trying to revolutionize drawing; the article, requested, is merely intended to provoke thought and discussion.



13" x 5' Underneath Motor Driven Tool Room Lathe



9-inch 1" Collet Capacity South Bend Underneath Motor Driven Precision Bench Lathe

16" x 6' South Bend Underneath Motor-Driven Lathe

SOUTH BEND LATHES

"A Modern Lathe at a Reasonable Price"

South Bend Back-Geared Screw Cutting Precision Lathes are made in five sizes: 9", 11", 13", 14½" and 16" swing. Each size is made in several bed lengths; standard and quick change gear types; with motor drive or countershaft drive. Write for General Catalog No. 98.

On Display in Principal Cities

Popular sizes of South Bend Lathes are carried in stock for immediate delivery and demonstration by machinery dealers in 477 of the principal cities of the world. A few prominent distributors displaying South Bend Lathes are listed below. Write for name of our dealer nearest you.

Boston, Mass.
The MacKenzie Machinery Co.
Buffalo, N. Y.
J. L. Osgood Machinery & Tool Co.
Chicago, Illinois
C. B. Burns Machinery Co.
Cleveland, Ohio
Reynolds Machinery Co.
Detroit, Mich.
Lee Machinery Co., Inc.
London, E.1, England
Buck & Hickman, Ltd.
Los Angeles, Calif.
Eccles & Davies Machinery Co.
Milwaukee, Wis.
W. A. Voell Machinery Co.
Newark, N. J.
J. F. Edwards Machinery Co.
New York, N. Y.
A. C. Colby Machinery Co.
Philadelphia, Pa.
W. B. Repp. Machinery
Pittsburgh, Pa.
Tranter Manufacturing Co.
Providence, R. I.
Geo. T. Reynolds & Son, Inc.
San Francisco, Calif.
Moore Machinery Co.
Seattle, Washington
Star Machinery Co.
Toronto, Ontario, Canada
A. R. Williams Mach'y Co., Ltd.

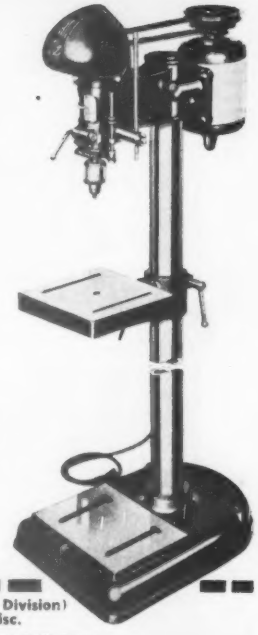
South Bend Lathe Works
924 E. Madison St. South Bend., Ind, U.S.A.

TRADE MARK SOUTH BEND TWINS ENGINE LATHES

SOUTH BEND LATHE WORKS
Lathe Builders Since 1906

Built With DELTA Low Cost 11-inch Drill Press Heads

You can make special set-ups **quickly** and **economically** with Delta Low-Cost Drill Press Heads. The photograph above shows but one of the thousands of special situations that are being met efficiently with these remarkable new type tools. Delta Drill Presses offer numerous excellent features—Self-aligning Drive, Free-Floating Spindle, Sealed-for-Life Bearings, Easy-changing Spindle and Unique Spring Housing. The heads can be used to make up special drilling units at a fraction of the cost of special machines for the same job.



Send for Drill Press Book

Mail coupon for latest Delta Drill Press Book. It contains specifications and prices of complete line of Delta Drill Presses plus details on individual parts from which you can make your own low-cost assemblies.

See the display of Delta Tools at the Machine Tool Exhibition in the CLEVELAND ARMORY in Booths 17, 18 and 19.

$43.55

No. 1289 — Floor-type Slow Speed 14" Drill Press with ½" Chuck and Standard Tilting Table (without motor)

DELTA MANUFACTURING CO.
(INDUSTRIAL DIVISION)
647 E. VIENNA AVENUE
MILWAUKEE, WISCONSIN

Delta Manufacturing Co. (Industrial Division)
647 East Vienna Ave., Milwaukee, Wisc.

Gentlemen: Please send me your latest Drill Press Book giving full details on your Drill Presses and details on how I can make my own low-cost assemblies.

Name .....

Address .....

City ..... State .....

SEMI-AUTOMATIC GRINDER HAS NEW FEATURES

(Continued from Page 15)

hydraulic control valves thereby producing the necessary mechanical movements.

In actual construction the mercury switch has two columns—each one of which contains an adjustable electric terminal. Just before the work is reduced to finished size or as commonly termed the roughing portion of the operation, the mercury touches the first or roughing contact. This energizes a solenoid which automatically reduces the rate of feed of the grinding wheel to any desired fraction of the former feed. The grinding continues at this reduced rate of feed until the mercury rising in the second column makes contact with the terminal whereupon a second solenoid is energized and the wheel moves away from the work, the carriage moves along to the next bearing where the cycle is repeated until all bearings are ground to size. An accurate micrometer adjustment to the air jet is provided for setting up but once the calipers and air jet are set for any predetermined size, no adjustments are required. The action is completely automatic being independent of wheel wear, amount of stock to be removed or the human element.

In this particular set-up shown in the illustrations, there are four sets of calipers and four mercury switches as the bearings being ground are of different size. By means of a rotary hydraulic valve and star wheel each sizing caliper comes in only at the time that particular bearing is being ground and recedes as soon as the bearing is to size. Similarly through a star wheel and gearing, stops are moved into position in front of the wheel head to compensate for the difference in basic size of the bearings so that the actual movement of the wheel head during grinding is only for the amount of stock to be removed.

One Man Operates Several Machines

Since the cycle is automatic it is possible for one man to operate several machines and still be confident that the work will be ground to exact size. From the point of view of a Tool Engineer this machine is interesting because of the ease with which it may be retooled should there be a change in the design of the camshafts which have to be ground on it. All that would be required would be a new set of caliper frames for the Landis-Solex sizing devices, new work rest shoes and a new spacing bar. Obviously, speeds and feeds would have to be readjusted, but the entire change-over would require a relatively short period of time and would not be costly. On any specialized high production machine this is particularly desirable.

Watch for "STUART OILS" in operation at Cleveland Tool Show!

FACTS ABOUT A.S.T.E.

NO. 1 OF A SERIES

Founded Jan. 29, 1932.

Incorporated under the laws of the State of Michigan as non-profit corporation, April 7, 1932.

Commenced membership with 114 members.

First Chapter Outside of Detroit—Racine, Wisc., chartered October 21, 1935.

First President—Joe Siegel, Packard Motor Car Company.

First Vice-President—W. H. Smila, Chrysler Corporation.

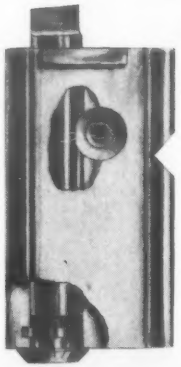
First Secretary—A. M. Sargent, Pioneer Engineering & Mfg. Co.

First Publicity Chairman—Ford R. Lamb.

First Regular Contributor to the A.S.T.E. Journal—O. B. Jones.

A.S.T.E. is "owned and operated" by its stockholders who are its members, every member having equal voice and vote in its operation and affairs.

CUT MACHINING TIME AND COSTS WITH WETMORE TIME-SAVER UNITS



Machining time and costs are reduced by WETMORE Time-Saver Units because they provide these positive advantages:

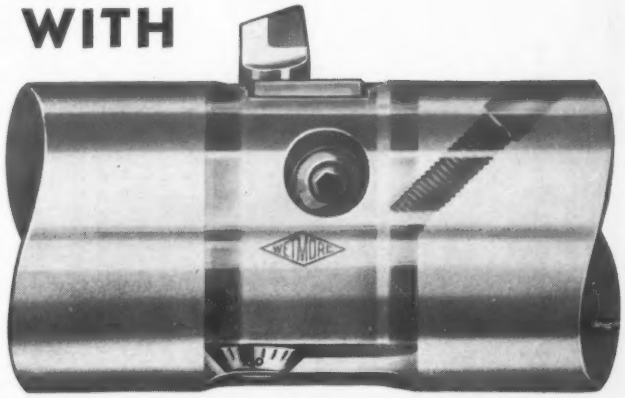
— eliminate present slow, costly, unreliable methods of adjustment.

— provide rapid, accurate adjustments in either direction with graduated screw.

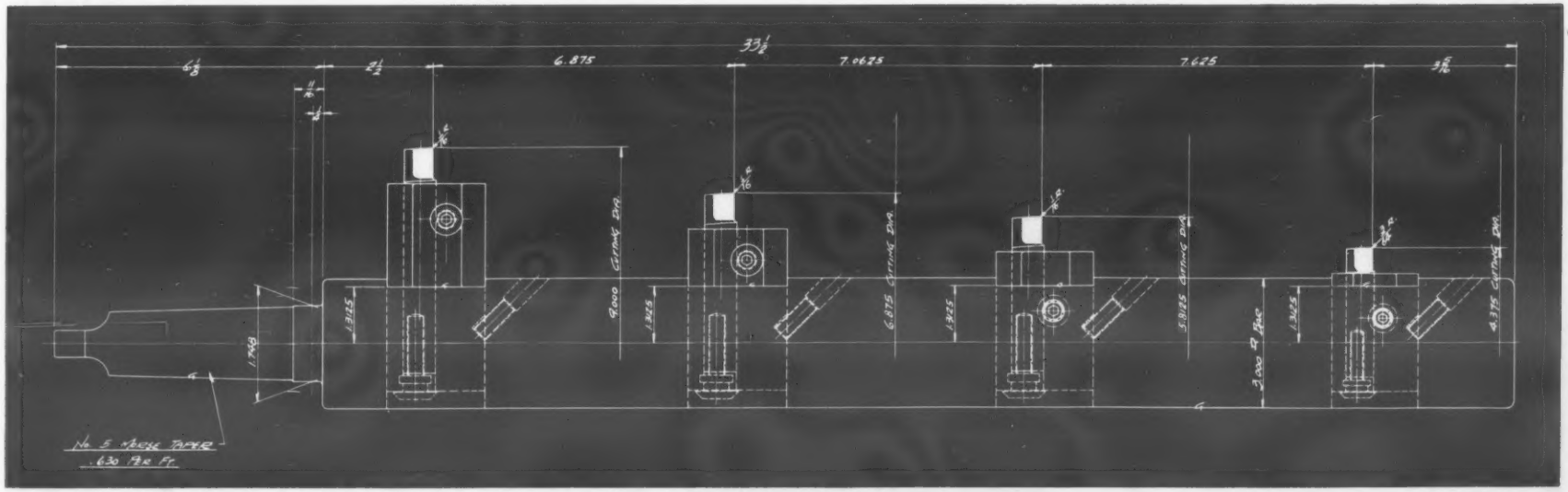
— wedge lock positively and solidly locks tool without changing setting.

— rugged construction of unit and firm grip of cutting tools by wedge lock adds to cutting life by elimination of vibration.

Send in your drawings—WETMORE engineers will design tools to reduce tool-setting time and cost per piece machined. See your WETMORE representative for many surprising possibilities and applications.



WETMORE Time-Saver Units Are Adaptable to Bars, Boring and Turning Heads.



Showing How One Bar Is Used for Four Different Diameters: The diagram shows a bar equipped with four interchangeable WETMORE Time-Saver Units—doing fast, accurate boring of four different diameters of holes. This bar can be equipped with other interchangeable WETMORE Time-Saver Units for boring different diameters of holes.

WETMORE REAMER COMPANY, Dept. TL **420 N. 27th St., Milwaukee, Wis.**

NEW MACHINES AND TOOLS

(Continued from page 22)

wheel head by power, with push button control.

A new and improved type of feed gear box designed for this machine provides very easy and sensitive hand feeding, also power feed at rates varying from .004" to .070" per minute, with automatic stop. The feed and the rapid raising and lowering of the head are interlocked. Features common to either Blanchard Surface Grinders such as one-piece steel magnetic chuck, three-point adjustable column support, and easy cleaning base are incorporated in the No. 11.

The base of the machine serves as a tank for the coolant and has a capacity of over 75 gallons. In an extension of the tank at the back of the base is the motor driven centrifugal pump supplying water to the inside of the wheel and to an outside nozzle through a ¾" pipe.

All controls are grouped convenient to the operator and all electrical control apparatus is mounted in one cabinet in the rear of the base easily accessible through a large door. The machine is shipped with all motors and controls wired in place and the user has only to connect at one point to the power circuit, and to the direct current circuit for the magnetic chuck. In spite of the fact that its capacity for work is larger than the No. 10 Grinder which it supersedes, this new No. 11 Grinder is very compact, having an overall length of only 5' 3" and width of 3' 6". The height of the chuck from the floor is 36½".

New 25 Ton Hydraulic Press

Those requiring small capacity presses for straightening, assembling and broaching will find the 25 ton press, recently completed by the Denison Engineering Company, Chestnut and Water Streets, Columbus, Ohio, of interest. Though built especially for straightening work, it is reported that it is similar in many respects to the line of various size standard or special presses this company builds.

The power unit is mounted as an integral part of the fabricated steel frame and consists of a 15 H.P. motor with hydraulic pumps of proper sizes to effect a down speed of the ram of approximately 24" per minute and is capable of effecting a 25 ton load at any point of the complete length of the stroke. The total stroke of the press is 18".

The control mechanism consists of one reversing 4 way operating valve connected by linkage to a special pressure control valve which is operated by the control lever located at the front of the press. The motor control push button is conveniently located on the side of the press frame.

Cycle of Operation—Full control is maintained through the use of a bar type foot operated pedal. Infinite tonnage variations up to the capacity of the press may be had by simply applying slightly greater pressures of the pedal. At any time that reversal is required it is only necessary to release the pedal and the ram will raise at approximately 48" per minute. Length of the reversal stroke may be decreased by an adjustable stop, which also acts as an unloading valve control. At the top of the reverse stroke the pumps are unloaded to the oil reservoir at 0 pounds pressure, thus by dropping the working pressure, a great saving in electrical energy is accomplished. Mounted directly in front, over the open throat of the press, is a 6" diameter dial pressure gauge graduated both in pounds per square inch and tonnage.

For further details on this press, or other size presses, address your inquiries direct to the manufacturer.

New Honing Equipment

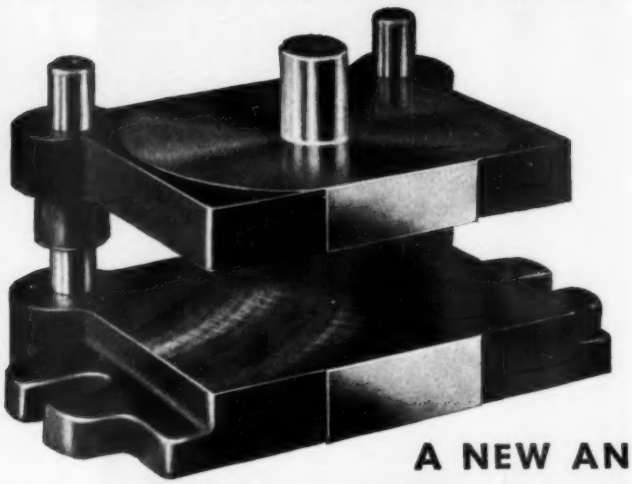
A departure from the conventional type of honing machine is offered by the Honing Equipment Corporation, 4612 Woodward Ave., Detroit, Michigan.

This machine has many new and interesting features. The spindle operates vertically through the work table. The speed changes for the reciprocation and rotation of the spindle are made independently, easily, instantly and infinitely through the turning of the knob controls. These controls are conveniently located and within easy reach of the operator.

The push button electric control switch has a start, stop and inch button. There is also a foot pedal control for instantly stopping the spindle of the machine without stopping the motor, permitting

(Continued on page 40)

DANLY *Announces*



A NEW AND ENLARGED LINE OF PRECISION DIE SETS

Danly Precision Guide Posts are ground, and lapped to plus or minus .0001" of listed dia. Precision Bushings are ground and honed to plus or minus .0001" of listed dia.

•

To meet the rapidly growing needs of the stamping industry, Danly Precision Die Sets are now available in a complete range of sizes of standard, back post sets for any die from 3"x3" to 16"x25".

Especially useful are a new square series, in sizes from 3"x3" to 14"x14".

The regular standard line has also been expanded, many new sizes added, and the line extended in the larger sizes.

If you have not received a copy of the new Danly Catalog, 10th Edition, which we believe is the most useful, easily used catalog in the industry, write for your copy.

Here you will find everything you need in standard die sets for the complete range of die requirements—and remember each size is stocked in each of the 8 Danly Branches for immediate delivery.

DIE BUYERS—Specify Danly Die Sets for Your Dies

DANLY MACHINE SPECIALTIES, Inc.
2130 So. 52nd Ave., Chicago, Ill.

It will be good business for both

DIE MAKERS—Include Danly Die Sets in Your Estimates

DANLY DIE SETS and DIE MAKERS' SUPPLIES

Their Dependable Quality Means Lower Cost Stampings

Are You Giving Your Recommendations The Protection They Deserve?

Find out about this easy, practical SYSTEM for getting better tool performance

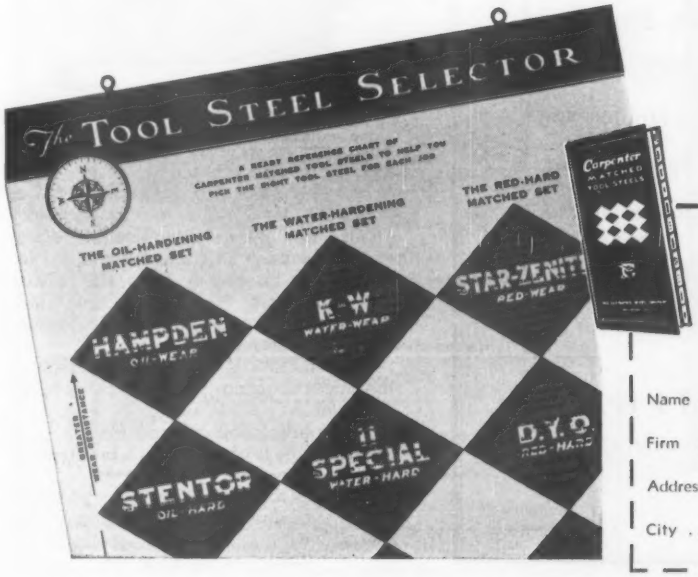
Better tools mean faster production and lower costs and something more besides. When they are the result of *your* recommendations, a product of *your* thinking and *your* knowledge, better tools mean continued success, additional security, a firmer foothold on the upward ladder.

That's why your recommendations deserve the protection you can give them with Carpenter's Matched Set Method. A simplified easy-to-use system, it helps you to quickly and safely get your jobs off your board, through the toolroom, and into production—gives you an extra insurance of success *after* the jobs have left your hands.

In the Toolroom it not only saves time but avoids trouble in hardening—helps you get exactly the tool you had planned. *In Service* it speeds up production, reduces tool failures, gives longer tool life.

So follow the lead of fellow tool engineers in hundreds of big and little plants and find out for yourself how much time and money can be saved by adopting the Matched Set Method in your plant. Write today for the Tool Steel Selector Wall Chart—your ready reference guide to this new method. We'll send you, too, your copy of Carpenter's 60 page Matched Tool Steel Manual. It tells you what the Matched Set Method is and how to use it. In addition, it gives valuable information, formerly known only to "mill experts," on heat treatment, furnace atmosphere, etc. Without obligation, use the coupon below to get your copies of these two valuable aids that help you get the tool performance you want.

THE CARPENTER STEEL COMPANY, READING, PA.



MAKERS OF FINE TOOL STEELS SINCE 1889

FREE WALL CHART AND MANUAL

THE CARPENTER STEEL COMPANY
122 W. BERN ST., READING, PA.

YES, I am seeking new ways to speed jobs and reduce costs. Without obligation, send me a Free copy of your Wall Chart and the 60-page Tool Steel Manual that shows how to put your system to work.

Name ..... Title .....

Firm .....

Address .....

City ..... State .....

NEW MACHINES AND TOOLS

(Continued from page 38)

the operator freedom of both hands and the machine cannot be started with the foot lever. The hand control lever will start and stop the spindle and is engaged with the foot control lever, so that, when the spindle is started again the foot lever automatically is set for stopping. The brake type clutch stops the spindle instantly when the clutch is disengaged with either the foot or hand control.

The coolant reservoir is integral with the base. All of the operating mechanism, including the motors are located in the cabinet type of base. The work table has coolant conductors properly pitched for draining the coolant to the reservoir through a filtering device. The spindle is of the spline type with ample bearings and protected against grit, dirt and moisture and can be arranged for any type of tool adaptor.

Self lubricating anti-friction bearings throughout, first class materials and workmanship, all parts are held to close tolerances insuring long life, regular and continuous operation.

This type of machine leaves everything clear above the work table for any kind of fixture to hold the work pieces, at the same time allowing a clear view of the operation at all times and with the proper fixture the work can be gauged without removal of the work piece from the machine or fixture.

The machine shown is in actual operation and is equipped with 1 H.P. power motor, ½" H.P. pump motor and has

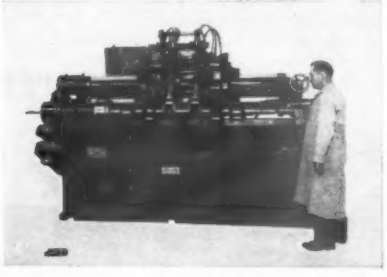
New Honing machine offered by Honing Equipment Corporation, Detroit.

reciprocation speeds of 700 to 1000 cycles per minute and rotation speeds 9/10 of a revolution per minute to 27 R.P.M. The mechanism is capable of honing and finishing bores up to 2" diameter. The facility with which speed changes can be made, the machine lends itself to obtaining any finish desired.

Foster "Superfinish" Crankshaft Machine

The photograph below shows a large crankshaft Superfinisher for pin bearings made for a leading Tractor Company.

Two Universal crankshaft machines were built; one as illustrated for Superfinishing pin bearings, and one for Superfinishing main bearings.



Large crankshaft "Superfinisher" for pin bearings, made by the Foster Machine Company, Elkhart, Indiana.

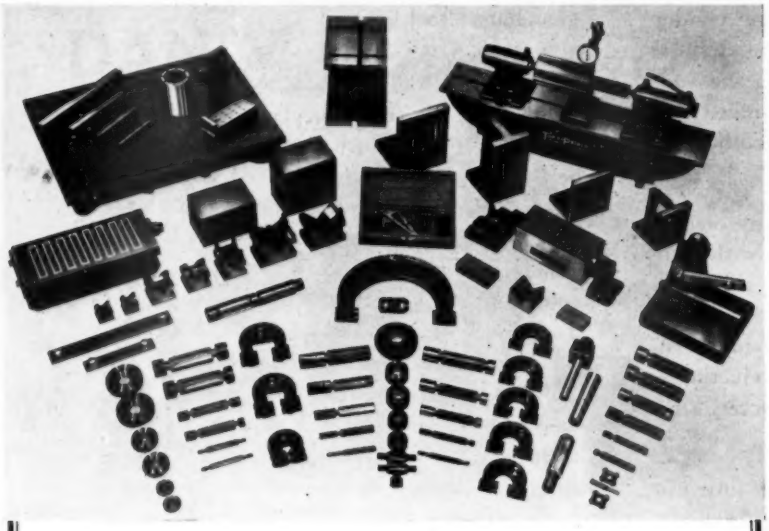
Both machines are Universal and are adjustable for various lengths of crankshafts. The Superfinishing Heads operate simultaneously and are adjustable. In the case of the pin machine, the Heads are adjustable to accommodate the throws of the crankshafts. The Heads also have lateral adjustment.

Fluid motors are used for oscillating the Superfinishing Heads. Cycle is fully automatic.

A Superfinished bearing from 2 to 3 micro-inches is obtained on a production basis.

The machine was manufactured by Foster Machine Company, Elkhart, Indiana.

(Continued on page 44)



For set-up and size control in production, or for Tool, Die, Experimental and Inspection departments, Taft-Peirce provides a complete line of gages, set-up and inspection tools, magnetic chucks and other shop accessories that save time, promote accuracy and increase machine utility. A few of these tools are shown above—the complete line is illustrated and described in the new edition of the Taft-Peirce Handbook. Write today for a copy. There is no obligation.

THE TAFT-PEIRCE MFG. CO.

WOONSOCKET • RHODE ISLAND

SJOGREN

PRONOUNCED (SHOW-GRIN)

SPEED COLLET CHUCKS

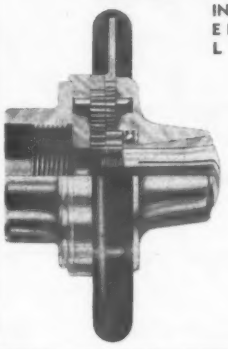
for your TOOL ROOM and ENGINE LATHES

. . . . . Saves Time . . . .

. . . Increases Accuracy. . .

. . . . Increases Capacity. . .

IN USE ON ENGINE LATHE



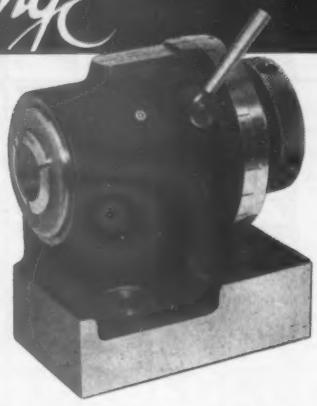
The amazing fast action of the Sjogren Speed Collet Chuck gives it full right to its name. An effortless turn of the handwheel, one way or the other, automatically opens or closes the collet, gripping or releasing the work as desired.

With the Sjogren Speed Collet Chuck, the operator is always in front of his work and he stays there. There is no need to reach over or to walk back of the lathe headstock to grip or release material in the collet.

Supplied for direct mounting to either threaded or standard type of spindle nose. Available in three sizes to 1¼" capacity. A distributor is located near you. Write for his name and address.

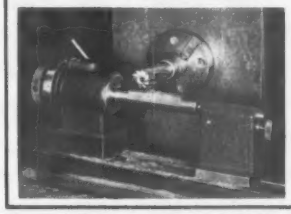
Hardinge

COLLET INDEX FIXTURE



1" capacity through collet. Index Plate has 24 holes. Furnished for other collets and with either 2, 3, 4, 5, 6, 8, 10, 12, 15 or 30 hole Index Plate. Available separately or with a Tailstock and Sub Base.

FOR LOW COST
TIME SAVING
ACCURACY
CAPACITY
ADAPTABILITY



Expensive holding devices for different operations are no longer necessary because Hardinge offers a Collet Index Fixture for many uses. Its adaptability to miller and grinding applications as well as its use with a shaper or drill press makes it indispensable in modern tool rooms and production departments and its low price justifies immediate use.

You should have a bulletin for complete details. Write for your copy which illustrates and describes the many time and money-saving applications of the Hardinge Collet Index Fixture.

Price $45.00

WRITE TO HARDINGE BROTHERS, INC., ELMIRA, N. Y. FOR COMPLETE LITERATURE COVERING PRODUCTS PRESENTED ON THIS PAGE

DRAW-IN COLLETS FOR YOUR LATHES AND MILLERS

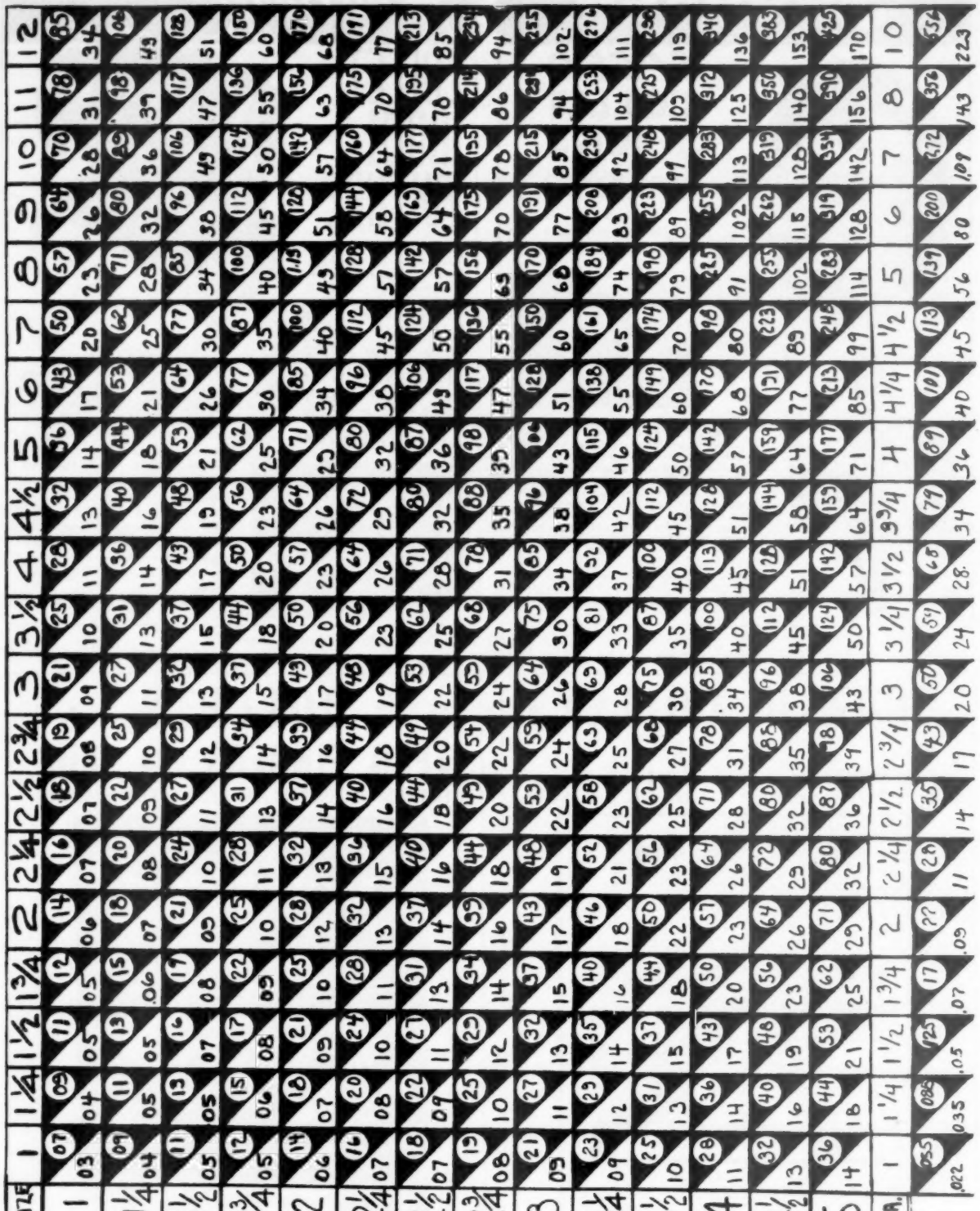
Make certain that you have this bulletin No. 37 which lists attractive prices and gives information and dimensions to make ordering of standard collets easy.

. . . COLLETS . . . FEED FINGERS AND PADS

FOR YOUR AUTOMATIC AND HAND SCREW MACHINES

Complete catalog No. 34 presents ordering information and attractive prices for standard and master collets and feed fingers.

TABLE for ESTIMATING COST of BAR STOCK



The table or chart here illustrated is of extreme value to anyone engaged in estimating cost of steel or materials of approximately the same specific gravity. It is compiled from the weight of steel per cubic inch.

It is based on prices of ten and twenty-five cents per pound. An example of its use is: to find the price of a piece of steel 1¼" x 2½" x 6" at twenty-five cents per pound. Find the size 1¼" in the vertical column at the left and move to the right horizontally to the column under 2½" in row across the top of sheet. The price 22c shown within circle is the cost of a piece 1¼" x 2½" x 1" long. Multiplying 22c x 6 will give the desired result.

The figure shown in the triangle is the price at 10c per pound. The figure in the circle at 25c. Other prices in multiples of 10 or 25 are easily obtained.

—Compiled by Jay Bowen, Member A.S.T.E.

TEAR OUT THIS PAGE (FILING SIZE) AND KEEP FOR FUTURE USE

TEAR OUT THIS PAGE (FILING SIZE) AND KEEP FOR FUTURE USE

KEEPING PACE With The WORKHEAD

with its increased efficiency - - is a job worth the best that any small tool line can deliver.

Morse Tools have kept pace with industrial development for generations . . . supplying the necessary qualities to maintain high production.

MORSE

THERE *IS* A DIFFERENCE

TWIST DRILL AND MACHINE COMPANY

NEW BEDFORD, MASS., U. S. A.

NEW YORK STORE: 130 LAFAYETTE ST. - - - - CHICAGO STORE: 570 WEST RANDOLPH ST.

PLASTICS

(Continued from page 13)

molding cycle takes usually 3 to 5 minutes and the parts are removed hot or with slight cooling. Phenol formaldehyde parts are usually dark colored. They may be produced in light colors but these are usually not satisfactory for automotive trim as they discolor under exposure to sunlight. Another important thermosetting plastic is made by reaction of urea with formaldehyde. This plastic is more expensive than phenol formaldehyde but may be produced in delicate shades which are resistant to light.

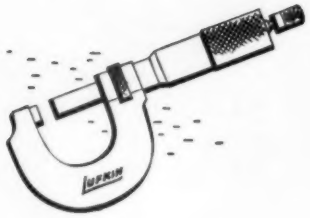
You have heard considerable discussion of soy bean plastic. Soy beans contain oil, protein, and carbohydrates. The beans are crushed and the oil extracted from the meal by means of a solvent. This oil is used in core oils, paints, and in the enamels used on Ford cars. The meal from which the oil has been extracted contains 50 per cent of protein, a chemically reactive substance. Attempts to produce a molding compound from soy bean meal are based on this protein content which in some respects resembles casein. Although a great amount of experimental work has been done, up to the present no completely satisfactory molding compound has been produced which is 100 per cent soy bean meal. The Ford Motor Company has, however, developed a molding compound containing soy bean meal together with phenol, formaldehyde, woodflour, lime, etc., which is very similar in properties to Bakelite-type molding compounds. This has been produced at the rate of 3000 lbs. a day for a considerable period and millions of parts have been molded from it and used on Ford cars.

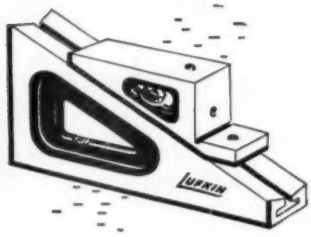
At the present time work leading to production of much larger moldings such as doors or rear decks is being carried on intensively. Fabric or paper sheets impregnated with resins will probably be the basis of these parts. The manufacture of suitable dies is one of the biggest problems in this application. We may be on the verge of very important new developments along this line. It is impossible to predict what is ahead, but in such a development it is certain that the die maker will be called on to take a conspicuous part.

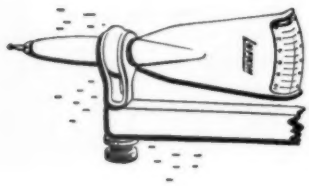
LUFKIN

AT THE

machine tool show







If you're lucky enough to be one of those attending the coming Machine Tool Show, don't miss seeing the amazing array of fine, advanced tools we'll display.

Micrometers may be one of the oldest and most universally used precision tools—but if you think that improvements can't be made in them, please hold your opinions until you see what Lufkin has done. And if you're not familiar with the new Master Planer Gage and Universal Indicator you have a thrill coming.

For example: The Planer Gage can be used on dozens of jobs for which ordinary Planer Gages are unsuited. The Indicator can be read without mirrors, no matter what position it's in.

We'll be happy to show you these and many other developments of importance to every user of precision tools. This is your invitation to drop in at our booth.

NEW YORK 106 Lafayette St.

THE LUFKIN RULE CO. SAGINAW, MICHIGAN

Canadian Factory WINDSOR, ONT.

TAPES — RULES — PRECISION TOOLS

NEW MACHINES AND TOOLS

(Continued from page 40)

Foster Superfinishing Heads

Foster Machine Company, Elkhart, Indiana, has developed a Superfinishing Head. Standard Heads are made in three sizes for work up to several feet in diameter.

The Superfinishing Heads are mounted on the compound of an engine lathe cross slide; and practically any cylindrical work within the capacity of the lathe may be Superfinished.

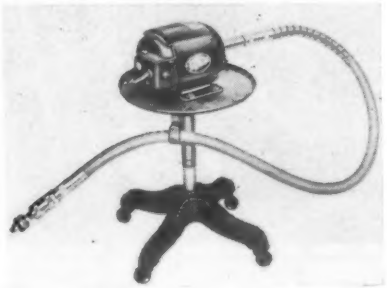
Special Heads may also be made for boring mills, grinders and other machinery.

The Superfinishing Heads have a wide range of uses, and have been used for all sorts of work from the Superfinishing of hairpin rolls to the Superfinishing of crankshaft bearings on large marine Diesel crankshafts, the crankshafts being several feet in length.

Attachments have also been very successfully applied on reamer and broach work.

Stow—New Line of Flexible Shaft Tools

A new, low-priced line of flexible-shaft tools, for grinding, polishing, buffing, rubbing, wire brushing, sanding, filing and drilling operations, has been



New Stow Junior Heavy Duty flexible shaft tools, made by the Stow Manufacturing Company, Binghamton, N. Y.

announced by the Stow Manufacturing Co., Inc., of Binghamton, N. Y., inventors of the flexible shaft.

(Continued on page 46)

What Is a **PROFIT ENGINEER?**

IT may pay you to make the acquaintance of this new type of Monarch engineer.

His first concern is . . . how to increase your profits.

Why not let him review your turning costs—and compare them with those your competitors are paying?

He might be able to point out how you could make even more profits . . . on your present volume of business. May we send him over to your plant? The Monarch Machine Tool Co., Sidney, Ohio, U. S. A.

YOUR SMARTEST INVESTMENT TODAY — BETTER MACHINE TOOLS!

MAKE MORE MONEY WITH MONARCHS

MONARCH LATHES
COVER THE TURNING FIELD

AGENCIES IN PRINCIPAL INDUSTRIAL CENTERS THROUGHOUT THE WORLD

NEW MACHINES AND TOOLS

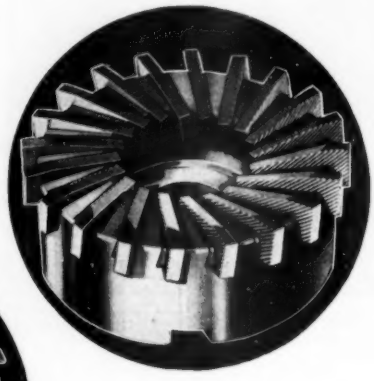
(Continued from page 44)

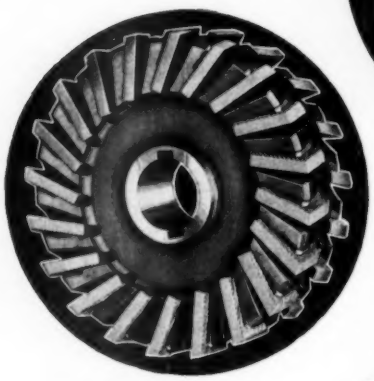
The new line, to be known as the Stow Junior, has been designed as companion units to the long-established Stow Heavy-Duty tools. From this well-known quality construction, various features of the new popular priced models have been patterned, with extra durability being the result, it is claimed.

First of the Stow Juniors to be put on the market is the pedestal type. It incorporates motor, extension cord and plug, flexible shaft and clamp spindle. Connection can be made with any light socket. Mounted on a 4-leg metal base with ball-bearing casters, the unit is steady and easily pushed about. The pedestal is adjustable in height and maintains low center of gravity with consequent good balance, even in extended position. It carries a convenient tool tray. Standard Stow attachments used on the heavy duty models are specified for the Stow Juniors also.

Motors of either ¼, 1/3 or ½ H.P. can be had, with two choices of speeds—1725 or 3450 r.p.m. The ¼ H.P. tool has a ⅜" flexible shaft 5 ft. long. Its maximum wheel capacity is 4" x 1" and maximum drilling capacity is ¼". The 1/3 and ½ H.P. tools have a ½" x 6 ft. shaft, a maximum wheel capacity of 6" x 1" and a maximum drilling capacity of ⅜".

GAIRING LOCK





Fine Tooth Cutters

No inserted blade cutter involving the use of locks so closely approaches the rigidity of solid cutters as GAIR-LOCK. On any operation requiring close tooth spacing for intermittant cuts Gair-Lock should be used because of its great compressive strength and the ease and speed with which blades are withdrawn, replaced and adjusted. Furthermore, Gair-Locked blades triple blade life -- decrease blade cost.

Our engineering staff is at your disposal. May we assist you?

The Gairing Tool Co., Detroit, Michigan

In Canada, Hi-Speed Tools Ltd., Galt, Ont.

SPECIALISTS IN FINE CUTTING TOOLS FOR 21 YEARS

PRODUCTION PERSPECTIVES

(Continued from page 26)

Springfield for the construction of a 19 by 81-foot addition to its two story factory. The addition will cost $8,000.

All **properties of the Worcester and Springfield plants** of the **Baldwin-Duckworth Chain Corp.** have been **transferred to the Chain Belt Co. of Milwaukee, Wis. as merger** of the concerns, under way for some time, **was completed** consolidating two of the largest companies in their line in the country, **according to William H. Gates,** production manager at Worcester.

A shift of personnel at the Plastics Division of **Monsanto Chemical Company, Springfield, results from** the **resignation of Arthur G. Ceely and Norman C. Hill** and the **appointment of Fred C. Gronemeyer** as plant manager **to succeed Mr. Hill. Mr. Ceely was assistant comptroller of the Fiberloid Corp.,** before its merger with Monsanto and **has been assistant production manager of the Plastics Division since.** The position left vacant by his resignation will not be filled. **Mr. Gronemeyer** who succeeds Mr. Hill as plant manager **has been resident engineer for the company for 10 years** and most recently has been in charge of all construction and mechanical engineering at the Springfield plant.

Business conditions in Westfield are definitely **on the upgrade. The Foster Machine Company is stepping up production** to meet the demands of an unusually large order and has added a night shift to its regular working force and the **Westfield Manufacturing Company** and other industries **are operating at a pace well above expectations.**

Emmons Crocker, 84, head of manufacturing plants in Fitchburg and in Quebec for more than 60 years, died recently. He **was president** of the **Union Screen Plate Company,** which he founded, **vice president** of the **Union Machine Company.** He resigned in 1934 as president of the Union Screen Plate Company of Lennoxville, P.Q. He **also established** the **Union Foundry Company in Fitchburg** but sold it years ago.

President Charles F. Robbins and **vice president Lu E. Coleman of A. G. Spalding Brothers, Inc., Chicopee, were honored recently at a dinner at Hotel Kimball,** Springfield, held in connection with the company's semiannual sales meeting. Each was presented a wrist watch on behalf of the two sales groups present, the factory salesmen and the mercantile salesmen.

Employment in the metal trades industries in Western Massachusetts remained about the same in July as in June. A. R. Tulloch, secretary of the Western Massachusetts branch of the National Metal Trades Association reports. For the month of July, a total of 16,381 persons were employed in the metal trades in this area. The total for June was 16,373. The industry has been stable most of the year, figures indicate.

(Continued on page 60)

TEE SLOT BOLTS

TRADE O K MARK

FOR USE ON PLANERS, BORING MILLS, MILLING MACHINES OR OTHER MACHINES WITH SLOTTED TABLES

THESE bolts are manufactured in the same factory as the well-known "O K System of Inserted-Blade Metal Cutting Tools," and with the same relative care. They are forged of special medium carbon steel, heat treated for maximum toughness. The heads are milled accurately to size. With each bolt is furnished an O K nut of special design, in which nut and washer are incorporated into one unit. Having nut and washer integral eliminates time which is often wasted trying to keep tabs on separate washers. This flanged nut is made of the same tough steel as the bolt itself.

"O K" Tee Slot Bolts may be obtained in any length, from 2" long to 24". A circular completely describing and pricing the line will be sent you on request.

THE O K TOOL CO.
Shelton, Conn.

TOOLING ECONOMY

SIMPLE ADAPTERS CAN BE USED TO HOLD COMPLICATED PARTS WHILE MACHINING

THE FIXTURE ITSELF NEVER BECOMES OBSOLETE

An aeroplane main bearing cap is shown, chucked ready to drill 6 bolt holes. Part is positioned from four bosses in lower adapter and squared and clamped on finished face by fixture head.

SWARTZ TOOL PRODUCTS CO., INC.

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Represented by

Cleveland—J. W. Mull, Jr.
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MARVEL

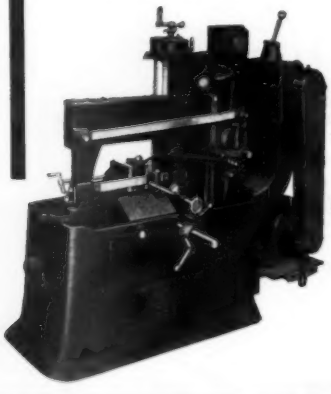
You are paying too much for **CUTTING-OFF**

unless you have one or more new heavy-duty, super high speed MARVEL Automatic Hack Saws, you are paying too much for cutting-off. No other machine of comparable accuracy will cut off an equal number of pieces from bar stock in diameters to 10″ with such speed, at such low labor cost, power cost, tool cost or with such small chip loss. Far heavier, and all ball-bearing, these MARVEL Automatic Saws No. 6A and 9A are built for continuous operation at speeds, feeds and blade tensions impractical for other equipment. They will cut off identical lengths, 10 pieces of 6″ round, 160 pieces of 1½″ round every hour floor-to-floor, and other sizes proportionally. They cut off squarely and accurately—save stock *and machining*. While strictly production tools that require no more attention than an automatic screw machine, MARVEL Automatics are also multi-purpose: will handle all run of the shop sawing easily and efficiently—bar push-up can be disengaged at any point, miscellaneous cuts made, and automatic operation resumed by re-engagement of the bar feed drive.

MARVEL 6A (Capacity 6″x6″)
MARVEL 9A (Capacity 10″x10″)

Note: These machines are available without automatic Bar push-up, with or without 4-speed transmission. The MARVEL Line, the most complete line built, provides saws exactly suited to each shop—from small low priced general purpose saws to giant hydraulics.

When you go to Cleveland for the Machine Tool Show, be sure to visit large operating exhibit of MARVEL Metal Cutting Saws at the Central Armory, across the street from the auditorium.



Write for Bulletin 600

ARMSTRONG-BLUM MFG. CO.

"The Hack Saw People"

5750 Bloomingdale Ave., Chicago, U.S.A.

September Chapter Meetings

Chapter Meeting Announcements must be received on or before the 20th of preceding month to appear on this page. Members and friends of The Society contact Chapter Secretaries for meeting details if your announcement does not appear below.

BALTIMORE

September 11, 1939—7:00 P.M. Dinner. Technical Session 8:00 Sears Roebuck Auditorium, North Avenue at Harford.

Speaker: Mr. E. V. Crane, Staff Engineer of the E. W. Bliss Co.
Subject: "The Working of Metals in Presses and Dies," illustrated with slides.
Reservations: Mr. Stanley S. Johns, 806 Evesham, Tuxedo 2127.

BUFFALO-NIAGARA FRONTIER

September 14, 1939—University Club, 546 Delaware Ave., Buffalo, N.Y. Dinner 7:00 P.M. sharp. Technical Session 8:00 P.M.

Speaker: V. H. Ericson, Norton Company.
Subject: "Refined Surface Finishes as Applied to Regrinding of Metal Cutting Tools."
Third Annual Stag Outing, Sept. 23rd, 1939, at Walker's Grove, Wehrle Drive, Williamsville, N.Y. Games, stunts, fun, eats, drinks (?) for everyone. Starts at 12:30 P.M. and ends ?

CLEVELAND

September 8, 1939—6:30 Dinner, GTV Club, 1622 E. 55th Street.

The get-together meeting will be a preview of entertainment to be given during the Semi-Annual Meeting which will be held during the Machine Tool Congress.

DETROIT

September 14, 1939—6:30 P.M. Dinner, $1.50 per plate, Starlit Room, Webster Hall. Technical Session 8:00.

Speaker: W. P. Woodside, Climax Molybdenum Company.
Subject: "Panorama of Alloys in Steel." Scund picture.

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in

MILWAUKEE

Established manufacturer's agent, in Milwaukee area, desires connections with manufacturer of tools and allied lines. Have had practical experience in both the making and use of production tools and equipment that he will be glad to use in behalf of some good line needing adequate representation in the Milwaukee territory. Write for a prompt reply.

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Universal- **IS AT YOUR SERVICE**

Universal drill bushings with their Superfinished bores—straight and round within .0001—are more accurate and wear longer. And there's no hold up on your Universal orders.

UNIVERSAL ENGINEERING CO.
FRANKENMUTH, MICHIGAN

MINNEAPOLIS-ST. PAUL

September 13, 1939—6:30 Dinner. Minnesota Union. Technical program and business.

CENTRAL PENNSYLVANIA CHAPTER

September 12, 1939—West York Inn, York, Pa. W. Market St. and Highland Ave. Dinner, 6:30 P.M., Eastern daylight time. Business meeting, 7:30 P.M. Technical Session, 8:00 P.M.

Speaker: Mr. E. Griffiths, Director of Time Study and Methods of the East Pittsburgh Plant, Westinghouse Electric & Mfg. Co.

Subject: "Rates and Methods for General Manufacturing."

ROCKFORD

September 14, 1939—Hotel Faust, Rockford. Exhibits: 5 P.M. to Midnight (continuous). Dinner: 6:15 sharp. Technical Session: 9:00 P.M.

Dinner Speaker: J. R. Weaver, National President of American Society of Tool Engineers, Inc.

Technical Lecture by Dr. Phillips Thomas, Electrical Expert, Inventor, and Research Engineer for Westinghouse Electric and Mfg. Co.

SCHENECTADY

September 11, 1939—Rice Hall, General Electric Co., Schenectady. 8:00 P.M.

Speaker: V. H. Ericson, Norton Company.

Subject: "Refined Surface Finishes as Applied to Regrinding of Metal Cutting Tools."

Members are invited to bring guests.

Stag Outing and Clam Bake Sept. 23rd, 1939, at Fred (Hooker) Smith's near Galway Lake. Chowder at 9:00 A.M., lunch. Bake at 4:00 P.M. Fun and action every minute.

SYRACUSE

September 9, 1939—Clambake at Hinerwadel's Grove.

September 12—Dinner Meeting at Syracuse Industrial Club.

Speaker: V. H. Erickson of the Norton Grinding Company.

Subject: "Refined Surface Finishes as Applied to Re-Grinding of Metal Cutting Tools."

The talk will be illustrated with two motion picture films entitled "Norton Abrasive" and "Norton Abrasive at Work."

TANNEWITZ DI-SAW

Saves an Average of $4.80 Each Hour It's Used

Inside and outside cuts on dies, shoes, templets and endless other jobs can be done in a small fraction of the time required by former methods. Saws, files and polishes. A highly developed, large capacity machine.

Write for literature.

THE TANNEWITZ WORKS
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Another **NEW FEATURE**

Universal Collet Chucks are now equipped with an automatic release spring which, as nut is loosened, forces the collet forward, automatically releasing the grip on the tool.

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The Verdict OF ENGINEERS!

Use BRISTO SOCKET SCREWS and cash in on these MULTIPLE SPLINE ADVANTAGES

ENGINEERS—yes, and designers, production heads, works managers—in fact, every man whose job it is to cut time, costs and effort in product assembling—all prefer Bristo's multiple spline socket head design for faster, tighter, easier socket screw set-up. And so will you!

Bristo Socket Screws are now used on such products as electric shavers, sewing machines, X-ray machines, tabulating and computing machines, stock market tickers, cameras, postage meters, scientific instruments and vending machines.

Put Bristo to the test today. Send for free samples and your copy of Bulletin 83-5V which gives complete details on these superior socket screws. No obligation. The Bristol Company, Mill Supplies Division, Waterbury, Conn.

FEATURES AT A GLANCE!

MULTIPLE SPLINE SOCKET—as positive acting as meshed gears—Won't split, shear, strip, round out, slip or jam—Sets tighter with less effort—No loosening under vibration—Takes wrench without fumbling or skidding.

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SET AND CAP SCREWS
Approved by the American Standards Association and the American Society of Tool Engineers

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ACME Standardized Drill Jig Bushings

Prompt delivery from stock on over 10,900 standard items—over 6700 ACME Standard—over 4200 A. S. A. Standard—all completely finished ready for use. *Special sizes made to order.*

Made in our new plant by the most exacting and scientific methods—insuring accurate fit plus long wear—concentric within .0003" full indicator reading.

Send for bulletin containing complete data and low prices. Satisfactory service guaranteed.

Also manufacturers of complete machine parts, specializing in hardened and ground parts requiring extremely close limits, lapped fits, etc; also hydraulic appliances for pressures up to 20,000 lbs. per square inch.

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A LOOK TELLS A LOT!

From your very first look at The Haskins Tapper you can tell it was built to do an altogether different kind of tapping job—**and to keep on doing it!** And the more complete your examination, the more you understand why this machine is setting new standards of speed, precision and endurance in hundreds of plants. There's no cost or obligation involved in taking a good look at The Haskins Tapper in the light of **your own** production problems—any time you're ready!

A FREE BOOKLET—"Precision Tapping at High Speed"—tells the whole story. Write for it. R. G. Haskins Company, 2756 W. Flournoy Street, Chicago.

HASKINS PRECISION *Tapping Equipment*

FLOATS RADIALLY

ZIEGLER

ROLLER DRIVE

Floating Holder

FOR

TAPS — REAMERS
COUNTERBORES
DIE-HEADS

"IT ALWAYS FLOATS"

Compensates for spindle misalignment, eliminating oversized or bell-mouthed holes.

Much set-up time is wasted, many parts are scrapped, trying to produce uniform and accurately tapped and reamed holes on machines with spindles out of alignment with the work. Many taps are condemned for this reason and many holes are reamed bell-mouthed or oversize. A Ziegler Floating Tool Holder will eliminate these difficulties. A trial on your most difficult job will convince you.

Holders made to meet all requirements.

Literature upon request.

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The first small abrasive wheels mounted on steel mandrels to be offered to industry.

The first with a special new and exclusive bond—stronger than ordinary bond—grinds more pieces per wheel—gives much longer service—eliminates tedious, costly hand work.

Chicago Mounted Wheels are tough, with a bond that can "take it." Made to meet modern working conditions of all type operations.

A full range of grades, grains and abrasives in all shapes insures the right Mounted Wheel for the job. Prompt shipment from stock at all times.

Catalog of complete line free.

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Smooth, controlled power at your finger-tips to do a multitude of jobs in model and tool room, on the production line, to repair some hard-to-get-at part on machinery, without removing the part. Equipped with special custom-built motor. Air cooled. Grease-sealed ball bearings. 7-bar commutator. 25,000 r.p.m. Wt. 12 oz. Plugs in any electric socket. $18.50 postpaid with 6 Accessories.

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ADJUSTABLE **ADAPTER** ASSEMBLY

- *Quick*
- *Accurate Adjustment*

Furnished with an Acme or Standard V Thread ground on the outside diameter, furnishing a bearing on the front end of the adapter.

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MAC-IT MAKES IT!

Any Heat-Treated Alloy Steel Screw!

Where else can you obtain 16 different kinds of heat-treated, alloy screws—all standard? Or any other type made to your specifications, and with Mac-it's quarter century of experience in making top quality products?

Plenty of buyers are making their jobs easier, getting better results, by standardizing on Mac-its. They're the only complete line of heat-treated alloy steel screws on the market. And they're good!

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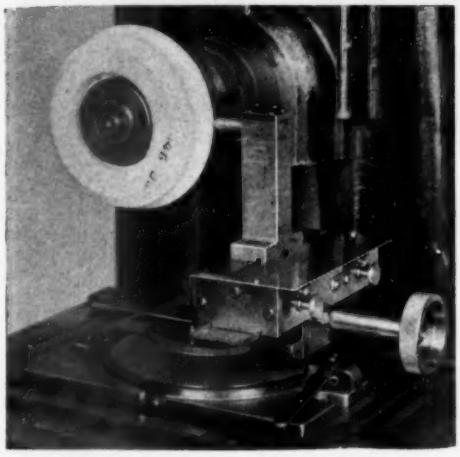
THE STRONG, CARLISLE & HAMMOND COMPANY
1392 West Third St., Cleveland · Ohio

The Vinco

Angle Tangent To Radius Dresser for Internal, External and Surface Grinding Machines

Patented June 5, 1934. Other patents pending.



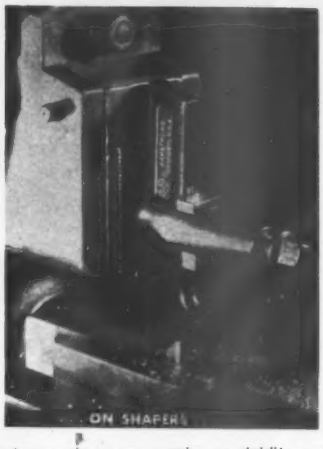
The Vinco Dresser is the only dressing device that has the basic patented feature of dressing angles and radii from the same axis without moving the diamond, without this feature it is impossible to dress angles and radii accurately, economically and tangent on abrasive wheels. It is made of the finest materials, all parts subject to wear are hardened, rough ground, normalized, finish ground and lapped. It is a permanent tool and will last a lifetime. It sells on its merit and we receive many repeat orders. It is fully guaranteed to be satisfactory.

Send for descriptive circular.

VINCO TOOL COMPANY

7350 Central Ave. **Detroit, Mich.**

ARMSTRONG



Get all the profit out of each operation with the right

ARMSTRONG TOOL HOLDER

The extreme strength and versatility of all ARMSTRONG TOOL HOLDERS leads to the use of a few types for all kinds of work. While every ARMSTRONG TOOL HOLDER "Saves: All Forging, 70% Grinding and 90% High Speed Steel" and even a "wrong" one will outperform the "right" forged bar tool, greatest efficiency can only be obtained by using the correct ARMSTRONG TOOL HOLDER for each operation — the ARMSTRONG TOOL HOLDER that gives maximum clearance, maximum rigidity or spring as needed, the correct cutting angle, the most efficient approach . . . that will make work faster, easier and more profitable.

ARMSTRONG TOOL HOLDERS cost so little compared with the years of service they give, it is a sound tool policy to use the right tool holder for each operation. You can build your Armstrong System a tool at a time, buying each as needed from the stock at your local mill supply houses. Write today for a Catalog and check the tools you use, against the ARMSTRONG TOOL HOLDERS designed for each operation. You may find a surprising number of places where you can step up speeds and feeds, and cut cutting cost at the same time.

Buy ARMSTRONG TOOLS from your Supply House

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900 ROOMS

FROM $2.50

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NEXT MONTH-

THE TOOL ENGINEER will feature the Machine Tool Show, the Machine Tool Congress and the American Society of Tool Engineers National Meeting being held in Cleveland coincident with the Show and Congress.

A pre-view of the Show and the many new tools and machines to be shown (many for the first time) will be a special feature of this issue, which will be mailed September 25th in ample time for your perusal before the Show.

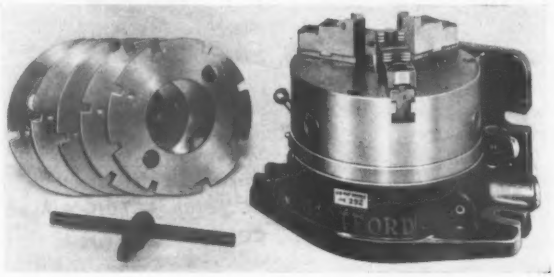
Be sure to take this important edition of THE TOOL ENGINEER with you as your constant guide to the Show, the technical sessions of the Machine Tool Congress and all the important events of A.S.T.E. in connection.

All forms for this issue close September 15th.

The Tool Engineer

"Most Intensely Read Journal in Its Field"

The Hartford
"SUPER-SPACER"



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The Hartford Super-Spacer is a new and superior spacing device for the rigid control of accurate machining operations within its scope. It is simple and rugged in design, substantially and precisely constructed and adaptable for a multitude of machining operations. Speeds and feeds limited only by the capacity and power of the machine are available with the Super-Spacer. Heavy cuts do not impair the accuracy of indexing, which is extremely rapid and positive—without the possibility of error. This chuck provides a secure and sufficient means for holding most jobs.

For further information write

THE HARTFORD SPECIAL MACHINERY COMPANY

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Columbia
TOOL STEEL

ACHIEVEMENT with today's Machine Tools is dependent on the satisfactory performance of the TOOL STEEL at the production end of the machine.

It pays to use Good Tool Steel.

COLUMBIA TOOL STEEL COMPANY

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Incorporates **GOVRO-NELSON** Automatic Units
Employing Centrifugal Force for
FAST, TOOL PROTECTING FEED

Send drawing for recommendations.

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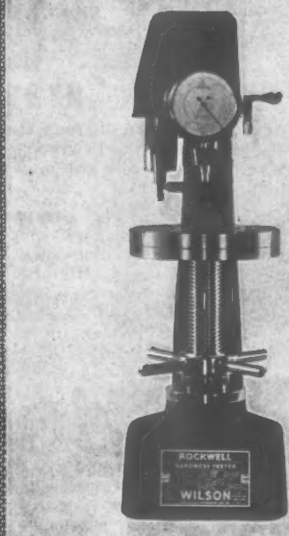

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"Birds of a Feather"

The ledgers of this Company are an industrial directory of this country, so far as cutter users are concerned.

NATIONAL TOOL SALVAGE CO.
DETROIT

CHAPTER DOINGS

(Continued from page 24)

no law against a person having a good time. Movies were taken of the entire outing and a preview shows them to be good. They will be shown at the first meeting in the fall.

Announcement was made we would hold our first meeting on October 5th with a meeting planned that will bring us an attendance of well over 350.

Despite vacations and week-end trips, the **Cleveland Chapter** had a nice crowd at their Summer Party. The Party was held at the Pine Ridge Golf Club. There was golf in the afternoon for the men only, and C. F. Kibby was the lucky man for the Blind Bogey. While Sid Langston came through with the low gross and M. J. Lloyd won the low putts, it was a toss-up between Ed Mack and Fitzsimmons as to which one would give up golf and take up some simpler form of amusement. While all this was going on the ladies and the youngsters played bridge, tennis, croquet or went swimming as their fancy suited.

H. V. Smith of Addressograph-Multigraph failed to find anyone who would introduce him to our Chairman, Jack Hawkey, so he contented himself with arguing with Mrs. Schurger. We don't know who won that argument but we do know that Mrs. Schurger won one of the bridge prizes, and we are told that Clarence is now taking lessons in some of the finer points of the game.

THE M-B "SUPER-SPEED" PNEUMATIC GRINDER MODEL S.S.-S.R.

THRILLING SPEEDS

AMAZING POWER

Steel Construction Throughout
POSITIVE QUICK ACTING AIR CONTROL VALVE

Operates on Air Pressures of 40-100 pounds

The ONLY Hand Grinder with spindle speed of 100,000 R.P.M. on 100 pounds air pressure

Other Models, also Air Line Filters and Automatic Air Line Lubricators

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VARIABLE VOLUME HYDRAULIC PUMPS

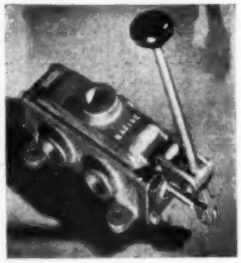
Tool Engineers and designers, you are offered a complete service for oil hydraulic systems. Variable volume pumps—Feed controls—Pressure regulators—manual and mechanical type valves. Let Racine assist you with your hydraulic problems.

Extremely quiet, smooth performance. A thoroughly proven efficient pump for pressures up to 1000 lbs. per square inch. Capacities 2000-4000-6000 cubic inches per minute. The Variable Volume feature saves horse-power. Delivers amount of oil actually required. Volume is controlled automatically or manually.

Write for catalog P-10

RACINE HYDRAULIC VALVES
A complete line—manual—pilot or electrically operated. Balanced pistons—accurately fitted. For oil-hydraulic installations.

Write for catalog V-10



"See them at our Booth No. 2101 at the Cleveland Show"

RACINE TOOL AND MACHINE CO.
1777 STATE ST. RACINE, WIS.

T. H. L. FRONT LEVER BENCH PUNCH

PRICE WITH ONE PUNCH AND ONE DIE—
$37.00
Immediate Shipment

Built for hard, tough work — die cannot lose alignment with punch—all parts interchangeable.

Capacity—½" holes through $\frac{3}{16}$" steel; $\frac{13}{32}$" through ¼" steel. Can also be made for holes up to ⅞" in thinner metal. Stock punches and dies available from $\frac{1}{16}$ to ½" by 64ths.
Weight, 70 lbs.

T. H. LEWTHWAITE MACHINE CO.
(Est. 1890)
307 E. 47th St. New York

THE EFFECT OF TECHNOLOGICAL PROCESSES UPON UNEMPLOYMENT

(Continued from page 18)

the development of machine tools. Changes in technology are generally accompanied by or are the result of other changes, not only in the industry in which the technological development takes place, but also in many related and unrelated industries. Because of the maze of factors which operate simultaneously impacting upon each other and upon technology, the net effect of a technological improvement may be with an increase in employment as well as a decrease in employment.

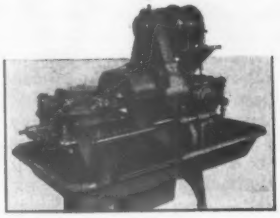
The maze of factors prevents our arriving at any direct positive answer as to whether or not technological development will displace men or create jobs. In one type of industry that is flourishing, it may be taken that such improvements will create new labor jobs. In the case of the vanishing industries, perhaps these changes may save them from utter extinction, but then it is a possibility that men will be displaced.

President William Green of the American Federation of Labor is well aware of the situation and, under date of January 4, 1939, wrote: "Labor has always believed that the increased production due to technical progress and new industries created by the interplay of such changes can result in greatly increased work opportunities. The Federation does not oppose the introduction of new machine tools nor new processes, but it does hold that before changes are made, plans should be made for workers who will be displaced and forced to find new jobs." He further adds: "Consideration has not been given to the displaced worker. Here is a most important function for the employment office in cooperation with vocational retraining. . . . We know very little about whether the displaced workers ever find new employment or whether they are forced into new occupations at lower earning rates."

President Green is right. Industry has neglected its displaced men. Perhaps by the feeling that the situation would eventually right itself by the machine tool creating employment in the long run. The situation is serious for those displaced. Obviously much more study must be given to this phase of which we know so little. Labor as a rule is inflexible, but by education and training it can be made more flexible and the young man at least can be aided in seeking the new niche in which he can fit.

Progress must go on. We should endeavor by all means in our power to see that the result of this progress is cheaper goods, so that the machine, the ultimate product, can be made available to the greatest number of people. Only by such means can our machine civilization grow. Only by such means can we reach a higher standard of living.

Rickert-Shafer Semi-Automatic Threading Machines



Double Spindle Type (illustrated) for spark plug and similar second operation threading.

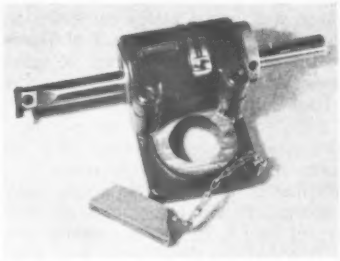
Also made in Single Spindle Type.

Write for bulletin and further information.

RICKERT-SHAFER COMPANY

Machinery and Tools

ERIE, PA., U.S.A.



The Everede Boring Bar Holders are adjustable to fit various size lathes. (Bushings are furnished with each boring bar for use in the Holders.) Everede Holders keep the boring bar in a horizontal position, regardless of any change in the size of the lathe, within limits.

The No. 1 Boring Bar Holder is used on precision bench lathes from 7" swing to and including 9".

The No. 2 Holder is used on engine lathes from 8" swing to and including 12", and the No. 3 Holder on engine lathes from 12" swing to and including 24".

The Holders are made of case-hardened alloy steel. A tool post block is attached to the engine lathe Holders by a chain as shown.

Send for descriptive folder.

EVEREDE TOOL CO.

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SHELDON Back Geared Screw Cutting **PRECISION LATHES**

No. 1136 WFCQ with Headstock Motor Drive Attachment $355.00 F.O.B. FACTORY

Here is today's best buy in a 11" back geared, screw cutting precision lathe. It's a full weight quality tool built throughout to industrial standards with:

11" Swing, 36" between centers, 56" hand scraped semi-steel bed with 2 V-ways and 2 flat ways. Large, hardened steel Spindle, and ground all over. Hand Collet capacity ¾". Phosphorus Bronze Bearings. Full Quick Change Gear Box. Worm Feed Apron with Power Cross Feed. Thread Chasing Dial. With floor legs, Headstock Motor Drive Attachment (less motor)

The Sheldon Line provides quality 10", 11" and 12" lathes at moderate prices. Complete in drives, attachments, etc. See the Sheldon before you buy.

SHELDON MACHINE CO., Inc.

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At Last!

A POSITIVE ROLL GRIP KEYLESS

DRILL CHUCK

that fills a long-felt need

Check these advantages:

1.—A chuck that will not let your drills slip.
2—100% keyless.
3—The heavier the load, the tighter it grips.
4—No more drill shanks damaged by chucks.
5—Yes! The tapered shanks are tempered.
6—A slight twist of the wrist releases drill.
7—Scientifically designed — ruggedly constructed.
8—Will run true and remain so during its life.
9—Unconditional one-year guarantee (barring abuse).

A folder giving prices and complete details will be mailed to you just for the asking.

MOTOR TOOL MFG. CO.

12281 Turner Avenue Detroit, Michigan

The Tool Engineer's Place in the Development of Aerial Transportation

aeroplane more as a military machine, than as a method of civilian transportation. Much of this state of mind, however, to the discredit of our present day civilization, is due to the fact that in a large portion of the Globe today, the sight of an aeroplane in the sky is a signal to dive into the nearest bomb proof shelter, and to don a hideous gas mask. Long may the people of these United States be spared from such dastardly misuse of the aeroplane.

Apart from its military aspect, I have often heard it said that Mr. Citizen is still afraid to go up in an aeroplane—that he wants to keep at least one foot on the ground. I doubt this very much. The same fellow will deliberately encounter more hairbreadth escapes in a short automobile ride, than the wildest passenger pilot would dare subject him to, and he will still come through smiling. Of course it is essential that the airlines use flying equipment that will retain the confidence of the people, but now that radio beacons, and instruments for blind flying are a reality, these will do much to overcome the fears of the most timid.

At the present time the cost of aerial

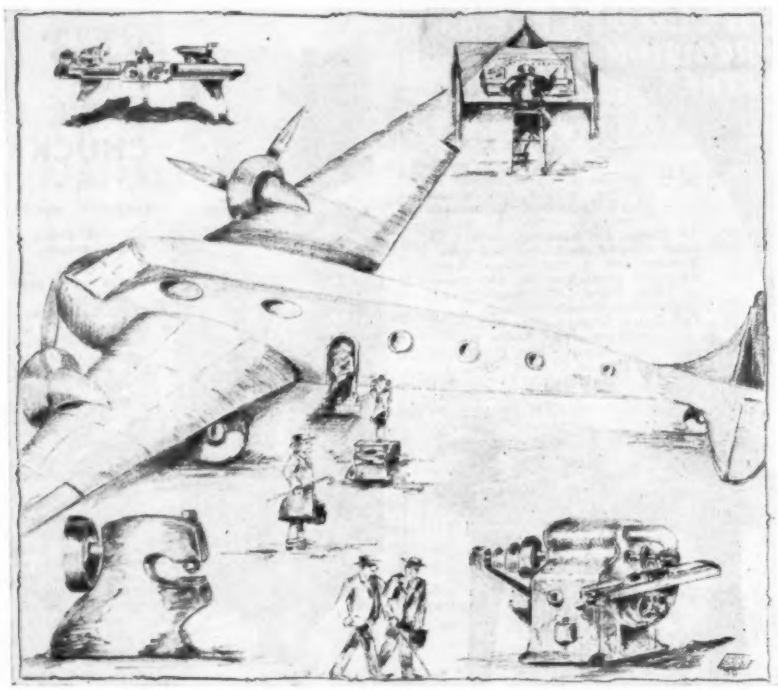
(Continued from page 11)

travel is one of the important factors to be considered in its development. It is not so much fear as thrift, that keeps the public on Terra Firma. This is where the influence of the Tool Engineer predominates. A reduction in the cost of flying equipment, is necessary before fares can be reduced, and it is the tool engineer's job to reduce the present high cost of aircraft.

During the past twenty years, tooling for aircraft has shown remarkable progress. The aeroplane of two decades ago, was built almost entirely by hand, with little thought for, or possibility of interchangeability. But that was before Tool Engineering was applied to the industry. In those days, the aeronautical engineer was limited only by his own imagination. Today, with the collaboration of the Tool engineer, his ideas, while not being restricted, must combine if possible, ease of manufacture, interchangeability and standardization, with aerodynamic requirements. If this combination fails, then it becomes a Tool Engineer's problem, because aerodynamic requirements must be held at all costs. It may be said therefore, that being responsible for all manufacturing problems, and in view of his achievements in so far reducing the cost of aircraft, the Tool Engineer is the chief press agent of aerial transportation. It is he who will eventually make it possible for the average Mr. Citizen to afford this luxury. Tool Engineering, to exist as a profession, must continually progress. The moment an idea or a process becomes known and successfully tried, the services of the Tool Engineer are seldom required to maintain it. Hence, he must have a fertile brain. His ideas must follow, with almost the rapidity of their adoption, otherwise the industry he represents will glide into a dead calm, and get nowhere.

The manufacture of aircraft presents a wonderful field for the growth of ideas. For instance, how can the assembly of aircraft be speeded up, to keep pace more adequately, with the present high production of the component parts? This is a problem that has the attention of a great many Tool Engineers in the aircraft industry today. Or shall we see in the near future, the development of a process whose cost will warrant the use of plastics in the structure of aircraft? It will only be through a rigorous attack on these and many other such problems, that eventually the Ticket Box prices of aerial transportation will be reduced. Yes, the Tool Engineer is playing his part in the popularization of the aeroplane.

Now that the development of Stratospheric aircraft has begun, there is no doubt that in the years to come, aerial transportation will supersede all other forms of travel. In the meantime however, the airlines must make hay while the sun shines with the equipment they have at their disposal, but it is up to the Tool Engineer to bring it within the reach of the General Public.



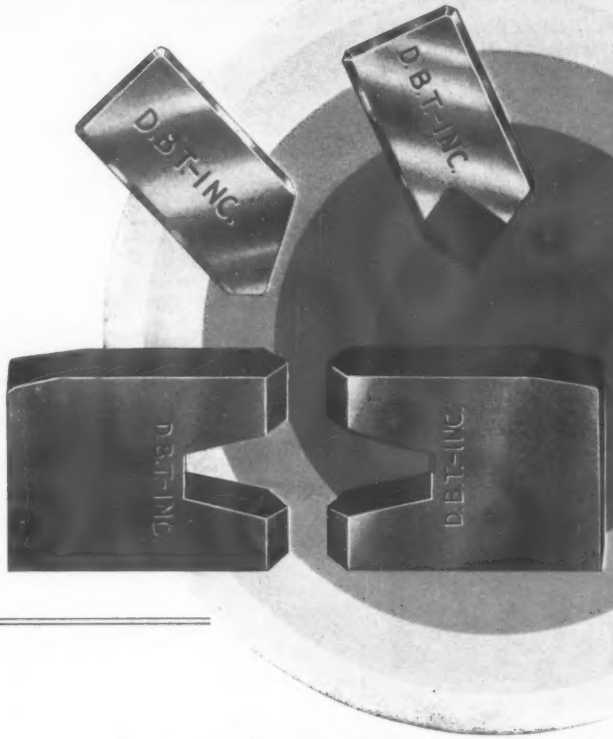
"Nor does our law of dependability end with creative genius." When the Tool Engineer "doodles," thinking about his job, this is what happens. Creative genius just will come out—from the simple fixture, jig or tool to the complex precision gage or intricate machine tool, each, contributing its important part to the making of a thousand and one products that are essential to modern living and enjoyment.

NEW CHAPTERS UNDER WAY

More new chapters of the American Society of Tool Engineers are under way at Atlanta, Georgia; Birmingham, Alabama; South Bend, Indiana; Houston, Texas, and other industrial cities. The A.S.T.E. now has thirty chapters in the more important industrial centers throughout the country.

If you are located in a city like Flint, Michigan or Peoria, Illinois or perhaps Tulsa, Oklahoma where we do not yet have a chapter and you would like to initiate such an activity write to New Chapters Chairman, Roy T. Bramson, 2842 West Grand Boulevard, Detroit, Michigan for full details.

Where Do You Buy Your DAVIS Boring Tool CUTTERS?



If you need a pair of Davis Cutters, made of some special metal, such as Stellite, Tungsten Carbide, etc., it isn't necessary that you order direct from the manufacturer of that metal.

As the manufacturer will conscientiously tell you himself, the best place to buy cutters for Davis Boring Tools is from the Davis Boring Tool Company. You'll get them just as cheap,—you'll get them correctly ground,—and most important of all, you'll be sure of a perfect fit.

Stellite Cutters, as well as Tungsten Carbide Tipped Cutters, in the more popular sizes are carried in stock for immediate shipment.

Davis Cutters in Davis Boring Tools guarantee absolute satisfaction

For efficient operation of your Davis Boring Tools, buy your Cutters (in ANY metal you want) from the Davis Boring Tool Division, Larkin Packer Company, Inc., St. Louis, U.S.A. Write us today.

DAVIS
BORING TOOLS

New Literature

of Interest to the Tool Engineer

Make your request for literature or information on New Equipment direct to manufacturers named, mentioning The Tool Engineer."

● "Taps and How to Use Them" is the title of an interesting little booklet recently put out by K. J. Papke Company, 1012 Third Street, Milwaukee, Wisconsin. The little booklet, of pocket size, gives practical pointers on the use of taps, the proper selection of taps for threading different materials etc. Years of experience have contributed in the making of this piece of literature of particular interest to the Tool Engineer and manufacturing executive. A limited supply is available to readers of "The Tool Engineer" who address their requests on company stationery.

● An interesting eight-page bulletin shows various types of round, out-of-round, flat, tapered, tubular and irregular contoured work being polished and buffed by the new Semi-Automatic Polishing and Buffing Heads for use with Double Spindle Lathes made by the Continental Roll & Steel Foundry Company, Industrial Equipment Division, East Chicago, Indiana.

Also described is the Continental Composition Applicator for Semi-Automatic Equipment and Continental Tube Burring Machines, Tube Bending Machines and Tube Mills which fabricate tubing from cold rolled strip.

Copies of this bulletin are available upon request from the company at 14400 Railroad Avenue, East Chicago, Indiana.

● Victor Machinery Exchange, 251 Center Street, New York City have issued their new 1939-1940 catalog entitled "Victor's Bargains in New Small Tools and General Catalog." It contains a comprehensive index listing Victor "bargains" from Aloxite Cloth to Wrenches etc. It is arranged in convenient form so that desired information can be found without delay. Request your free copy direct from Victor's Machinery Exchange.

● The Standard Electrical Tool Company, Cincinnati, Ohio, has published Bulletin No. 162, covering their recently developed line of type BPA Precision Internal-External Grinders. Illustrations, as well as complete information on this equipment, designed for application to lathe, planer, milling machine, etc., are contained in this bulletin. Belt drive and spindles mounted in precision bearings are featured.

● Executives and engineers of plants using or making gears will find much helpful information in the new bulletin No. 442, just issued by Farrel-Birmingham Company, Inc., 344 Vulcan St., Buffalo, New York.

This bulletin describes in detail the latest type of Farrel-Sykes gear generator for generating gears up to 25" diameter and explains the advantages the machine offers for high speed production of precision herringbone gears and other types of gears used for connecting parallel axes. The bulletin also describes the features of design and its precision construction which make the machine practically noiseless even when operating at high speed, at the same time enabling it to generate high precision gears rapidly and economically and to improve the accuracy of commercial gears without increasing their cost.

The new bulletin describes automatic features of the machine which reduce the operator's work to placing a blank in position, pressing a starting button and removing the gear after the teeth are cut, permitting him to attend two to four machines. It also contains tabulations giving specifications and capacities of the 2-C and other sizes of Sykes gear generators.

● Armstrong Bros. Tool Co., "The Tool Holder People," Chicago, announce a new General Catalog, No. C-39, of all ARMSTRONG lines which include: "ARMSTRONG" Tool Holders; Carbon, Chrome-Vanadium and Detachable Head Socket Wrenches; "C" Clamps; Lathe and Milling Machine Dogs; Turret Lathe and Screw Machine Tools; Ratchet Drills; Bits, Blades and High Speed Steel; Setting-Up Tools; Machine Shop Specialties, and "ARMSTRONG BROS." Pipe Tools.

AT WORK IN EVERY INDUSTRY

- In every Industry, where things are made for Man's Needs, Comforts or Pleasures, there NATIONAL Metal Cutting Tools are found at work.
- Chosen on their merits, they are finding an ever widening field.

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Factory Branches • New York • Chicago • Philadelphia • Cleveland • Distributors in Principal Cities

PRODUCTION PERSPECTIVES

(Continued from page 46)

The possibility that the **Greenfield Tap and Die Corporation may be spared the expense of constructing a costly new addition to its plant No. 1 as a means of escaping future flood damage is foreseen by Francis A. Smith, vice president and general manager** of the corporation **as the result of congressional action** in adopting an amendment to the omnibus flood control bill. **The Greenfield Tap and Die plant** was **seriously damaged both in 1936 and 1938,** and officials had already secured the approval of the directors to erect a new addition west of the present plant into which departments adjoining the Green River were to have been moved. Practical assurance of a survey means that construction of the new building will be postponed and perhaps made unnecessary.

Commissioner of Industrial Relations **Howard E. Armstrong of Vermont reports improved business conditions** and **evidence of much more activity than last year.** Armstrong made a tour of the state with Philip Shutler, director of the planning board and Charles Root, chief factory inspector.

Spontaneously remarking on the improved conditions in Vermont industry, **Armstrong said** that **business was particularly good with machine shops, foundries.**

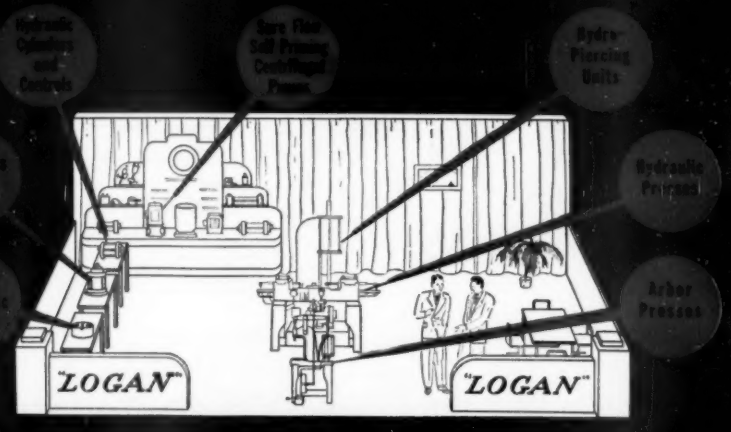
Industrial activity in Laconia, N.H., is definitely **on the upward trend** with a majority of factories and manufacturing plants reporting a marked increase in business over a year ago. Several, including **Scott and Williams, Inc., manufacturer of machinery** have **nearly doubled their payroll,** while other companies have added verying numbers of employes. The machine industry appears to have taken the lead in Laconia's comeback.

At a meeting of stockholders of the recently reorganized **Fay and Scott Company,** machine tool manufacturers, **in Exeter, Me.,** the following **officers and directors were elected: President Fred A. Britten; vice president, Peter S. Plouff; managing director, Joseph B. Weaver; treasurer, William R. Spencer; secretary-clerk, Myrtle E. Leighton. Directors are Winthrop L. Fay, Clarence H. Crosby, William McC. Sawyer, Fred W. Greene, Joseph B. Weaver, Fred A. Britten.**

Government aircraft contracts have provided summer stimulus for many of **Connecticut's heavy industrial plants,** with divisions of United Aircraft Corp. in East Hartford and Stratford notably benefited. Beginning of production for 1940 in the automotive industry has also helped Nutmeg state manufacturers. Otherwise, July and August were rather dull months, but **prospects for Fall and Winter business are** considered the **best in several years.** . . . Increasing production tempo in **preparation for Christmas trade** is noted **at such plants as A. C. Co., New Haven,** mechanical toys and small appliances, and **New Haven Clock Co.,** New Haven. At the latter plant, 150 employees laid off in mid-June were called back to work August 1, and President Richard H. Whitehead reported fresh orders in hand. . . . The **Tool department** at **Winchester Repeating Arms Co.,** New Haven, is now **employing 200 men** as compared with the normal number of 150. The **increase is due to** manufacture of tooling equipment for the new **Garand semi-automatic rifle,** on which the company has a $1,000,000 "educational" order. . . . More than **1,000 employees of the Bryant Electric Co.** and **Hemco Plastics division** of Westinghouse Electric & Mfg. Co., Bridgeport, participated in **a 10 per cent bonus for the month of July amounting to $15,500. . . . Chandler-Evans Corp.,** newly-formed **aircraft accessories concern organized** in Detroit, Mich., **by Charles W. Deeds and associates,** is **starting production of aircraft carburetors and fuel pumps** in new quarters in **South Meriden, Conn. . Torrington Co.,** Torrington, **has started construction of a one-story plant addition,** 60 x 300 feet. . . . **American Brass Co.,** Waterbury, **has awarded contracts for an addition to its Blake & Johnson plant,** Waterville, which will be one story, 200 x 122 feet, and will cost about $40,000. . . . **Charles E. Andrus,** foreman of the stock room in **The Stanley Works,** New Britain, has **completed 52 years with the company. His father worked there** 42 years, and **a son and two grandsons are now employed by Stanley.**

"LOGAN"

★ ★ ★ ★ PROFIT MAKING EQUIPMENT AT MACHINE TOOL SHOW ★ ★ ★ ★ ★



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National Machine Tool Builders' Show
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402 Payson Road, LOGANSPORT, INDIANA
Manufacturers of Air and Hydraulic Devices, Chucks, Cylinders, Valves, Presses and Accessories

KENNAMETAL *Removes* 60% TO 174% MORE STOCK PER MINUTE

KENNAMETAL

COBALT CHROME ALLOY

HIGH SPEED STEEL

The table below was compiled from figures in the machining of S.A.E. 1045, a typical carbon steel in common use. Note that in this instance KENNAMETAL cuts from 3 1/3 to 5 5/7 times as fast, with 2 3/5 to 6 times as many pieces per grind, and removes 60% to 174% more stock per minute.

	High Speed Steel	Cobalt Chrome Alloy	KENNAMETAL
Speed (ft./min.) ..	70	120	400
Feed (inches)	.0625	.0625	.030
Pieces per Grind ...	10	25	60
Depth (inches) ...	5/16	5/16	5/16
Stock Removed (cu. in./min.) ...	16.40	28.00	45.00

KENNAMETAL will machine **steel** heat-treated to 550 Brinell while combining roughing and finishing in one operation. Write today for catalogue; also new chart of "Materials Machined with KENNAMETAL."

DETROIT REPRESENTATIVE: Elwin M. Strickland, 2008 West Grand Boulevard, Detroit . . . Tyler 4-2975

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600 LLOYD AVENUE
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PRODUCTION 150 PER HOUR

at 85% efficiency

An example of Bradford production efficiency is shown in the machine above. This five-station horizontal index table machine is used by a popular make auto manufacturer to drill, tap, face, counterbore and coredrill an oil pump bracket. It embodies three inverted units, with sealed spindles, which come up to the work through the coolant trough; fully enclosed motors; synchronization of all movements by limit switches and relays, and built in wiring and control panel.

Write for further details on this and other Bradford PRODUCTION Equipment

THE BRADFORD MACHINE TOOL COMPANY
Cincinnati (Est. 1840) Ohio
DEALERS WANTED FOR SOME TERRITORIES

NOW.. GRIND THREADS at a FRACTION of Former Cost

New **ATTACHMENT** *Revolutionizes* **THREAD GRINDING**

Set up Grinder by easy instructions

Wheel is quickly, accurately dressed

Quickly, easily convert one of your lathes into a precision machine for grinding threads. An amazing new attachment for a Dumore No. 5 Grinder does the trick . . . costs but a small fraction of the usual investment for special thread grinding machines . . . requires no installation expense . . . no extra power. Can be set up and operated by anyone who can chase a thread. Ask your Dumore distributor for demonstration in your plant. No obligation.

THE DUMORE COMPANY, Dept. 229J, RracINE, WISCONSIN

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PRECISION GRINDERS

CERROMATRIX will save that cracked die!

You can save that cracked die the way International Register Co. saved this one—by nesting the parts in a steel ring, holding them in place with screws driven into the sides through the ring and then pouring Cerromatrix around the nested parts inside the ring. Sectional dies are made easily by the same method. Dozens of other uses for this low-temperature-melting alloy that expands slightly on solidifying are described in booklet. Send for your copy—no obligation.

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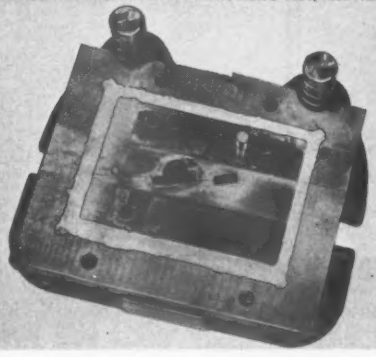
CANADIAN REPRESENTATIVES: DOMINION MERCHANTS LTD., MONTREAL, CANADA



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Watch your Diamond Point SAFETY Line!

DYKON Gage

shows when Diamond has worn to "lowest" safety level and should be returned for resetting.

Continued further use means abuse

Let the DYKON Gage lengthen the life of your diamonds

This simple, positive protective device is adapted for all Diamond Tools and is an exclusive service offered without charge to all users of our Diamond Tools.

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New, Long Length

HIGH SPEED DRILLS

9" Cutting Flute
12" Long

Size	Length Overall Inches	Length of Flute Inches	Our Net Price Each
3/16	12	9	$1.50
7/32	12	9	1.60
1/4	12	9	1.75
9/32	12	9	1.85
5/16	12	9	2.00
11/32	12	9	2.25
3/8	12	9	2.50
13/32	12	9	2.75
7/16	12	9	3.00
1/2	12	9	3.25

Orders for 12 or more assorted sizes will take 10% discount from above prices.

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ORIGINATORS AND
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CLEVELAND
OCT. 4 to 13, 1939

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Here's a Tip For Successful Tool . . . . Engineering

A WINNING PAIR

Your End Mills and Dalrae High Speed Milling Attachments . . .

THE SPEEDMILL
and
THE MIDGETMILL

It is only necessary to mount Dalrae milling attachments on the overarm once. These are the only attachments on which any conceivable compound angle can be obtained. It swivels 360 degrees in either direction. The weight of our spindle balances the weight of the motor thus making it safe when mounting.

Get the most from tool and machine—for successful tool engineering. The Dalrae Midgetmill is especially designed to get the most from small tools by providing the correct high speeds they need for most efficient operation. Don't try to do a 1200 R.P.M. job on a 400 R.P.M. milling machine. Attach the Midgetmill to the overarm and get the correct high speeds that mean smooth, clean, accurate work and long tool life. Of paricular advantage is the "Thou-Meter," which gives a continuous reading in thousandths of the depth at which you are working—as described and illustrated at right.

Close-up of the "Thou-Meter," showing a setting of exactly 2.500". To use the "Thou-Meter," merely touch tool to work, set dial at zero, and mill, drill and bore until dial shows correct reading—in thousandths. The "Thou-Meter" is accurate to ±.00025" in its 2½" of travel.

DALRAE TOOLS CO. SYRACUSE, NEW YORK